

CLEAN AIR ACT AMENDMENTS OF 1989

HEARINGS
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OF THE
COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
ONE HUNDRED FIRST CONGRESS
FIRST SESSION
ON
ACID RAIN

PART 5

OCTOBER 3 AND 4, 1989
OCTOBER 9, 1989—BILLINGS, MONTANA

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CLEAN AIR ACT AMENDMENTS OF 1989

ACID RAIN

TUESDAY, OCTOBER 3, 1989

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:37 a.m., in room 216, Hart Senate Office Building, Hon. Max Baucus (chairman of the subcommittee) presiding.

Present: Senators Baucus, Mitchell, Lieberman, Simpson, Jeffords, and Graham.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. The hearing will come to order. Today we begin hearings on acid rain. For the past nine years, the Congress has grappled with this difficult problem. Regional differences and the opposition of the previous Administration prevented action.

Nine years ago, a far-sighted senior Senator from New York thought to initiate a 10-year research program on acid rain. He was the first to legislate on acid rain and deserves credit for taking such a bold first step. At Senator Moynihan's request, we will be holding a hearing later this week on the progress of the acid rain assessment program.

The Bush Administration has apparently heeded the message. Earlier this year, President Bush submitted a strong acid rain proposal to Congress. I applaud his efforts and welcome him to the debate. I believe we are closer than ever before on a compromise. The agreement Senator Mitchell and I reached builds on the President's initiative.

It redresses some past wrongs that are deeply troubling to the West while it avoids economic devastation of the Midwest. I do not speak about economic devastation from the perspective of a distant or detached observer. Montana is known as the Treasure State. It is a State of abundant natural beauty and resources but since 1980, roughly 8,000 jobs have been lost in Montana's copper industry.

Sixty-five percent of our primary metals production has simply vanished and with the demise of the Milwaukee Railroad, we have lost what little remained of our competitive rail service. The

mining, smelting and rail communities of my State have been economically devastated by these events.

Having witnessed these depressing economic events firsthand, this is one United States Senator who is very sensitive to the economic consequences of the actions this committee and the Congress will take concerning acid rain but effective action regarding acid rain is long overdue.

This committee must seek a delicate balance. The Mitchell-Baucus proposal builds on the foundation established by President Bush. I believe we are moving toward a consensus and in the right direction. I look forward to hearing the testimony we will be receiving this week on acid rain.

We have several members of the Senate as witnesses this morning. Most of them are here. The first will be the Honorable Senator Wirth from the State of Colorado.

STATEMENT OF HON. TIMOTHY E. WIRTH, U.S. SENATOR FROM THE STATE OF COLORADO

Senator WIRTH. Thank you very much, Mr. Chairman. I really appreciate being asked to come over this morning. I wanted to speak very briefly to the quality of your legislation and particularly to the wonderfully innovative approach you have taken, similar to that of the President's bill, on tradeable permits.

You and I, Senator Baucus, have been working for a long time on the issue of acid rain, particularly in the vexing way that hits the Rocky Mountain region. It has been very troubling that where we have a small acid rain problem but a growing one; we have a very different kind of a pollution control problem; and we've been hurt by the percentage reduction requirements that have been in the legislation for too long a time.

In looking at this problem, I've been re-examining the question of how we might approach controls on acid rain. In the summer of 1988, Senator John Heinz and I commissioned a study of innovative approaches to the solution of a variety of environmental problems. We entitled that study Project 88. We hoped that that might inspire the next Administration, whether Democrat or Republican, to go beyond business as usual and introduce innovative approaches to environmental regulation.

I want to praise you and the President for adopting just this sort of innovative approach by proposing the use of emissions trading in acid rain control. Using such a system was a key recommendation of Project 88 for a variety of reasons. First, it gave us much greater bang for the buck, allowing us to set up an ambitious program calling for 10 million tons of SO₂ reductions at far less cost.

A recent study by EPA projects that emission trading has the potential to cut control costs by as much as 50 percent. Second, it provides a kind of freedom of choice. I have a full statement on the whole question of emission trading which I would like to have included in the record if I might, Mr. Chairman. I think that emissions trading will make the job that States like Senator Coats' have, much, much easier in achieving the ambitious goals of your legislation.

So the tradeable permit issue is a very, very important concept and I want to commend you and Senator Chafee and the committee for including that in your legislation.

Two other quick points—I noted earlier, the deletion of the percentage reduction requirement, a very important endeavor, a much fairer approach and I think a very good one.

Finally, the legislation is clearly going to be helpful to us in protecting national parks. We're seeing all across the West some very significant problems of the diminution of the quality of those national parks due to problems of air pollution and your legislation, when enacted, will be a major step in the right direction.

So I thank you very much for asking me to come and testify, for including the very innovative tradeable permit system, for having a very strong acid rain provision, for deleting the percentage reduction requirement and for helping us along the way to protecting the natural resources of the West. I will ask that my statement be included in full in the record.

Senator BAUCUS. Your statement as well as the others will be included in the record.

Senator WIRTH. Thank you very much, Mr. Chairman.

Senator BAUCUS. Senator Coats.

STATEMENT OF HON. DAN COATS, U.S. SENATOR FROM THE STATE OF INDIANA

Senator COATS. Mr. Chairman, I likewise thank you for the opportunity to testify before you and to bring some perspective from the Midwest which clearly is heavily impacted by the legislation before you.

Both Senator Wirth and I served on the Energy and Commerce Committee in the House and so we've had some experience with this issue, and struggled without success to find an acceptable compromise on how to amend the Clean Air Act to deal with not only acid rain provisions but mobile source emissions, ozone and so forth.

It appears that we are now on a track to make substantial changes in the Clean Air Act which will bring about a cleaner environment which is something that all Americans want. As someone who has traveled extensively throughout Indiana in the past year, I can tell you that contrary to the perception of some, Hoosiers want to do their part to clean up the environment. We live and breathe the air that all Americans live and breathe and we want to do our share in making substantial improvements in clean air.

We also want to impress upon you the fact that, because Indiana generates most of its power through the burning of coal, we will be heavily impacted by whatever legislation finally emerges, whether it's the President's bill, the compromise bill being put together in the House, the Mitchell-Baucus bill or some combination thereof, those of us in the Midwest and particularly Indiana will be severely impacted.

As I said, we want to do our share. We want to make sure that that share is defined as a fair share. There are considerable concerns that some Midwestern States are being asked to bear more

than their share of costs in meeting the goals outlined in whatever legislation we finally end up with.

Whether it's the steel industry in the Northwest or the coal miners in the South of Indiana, we want to be sensitive to the contributions that they're asked to pay to meet the worthy objective of achieving changes in the Clean Air Act, and improvements in the environment.

Now the Indiana Department of Environmental Management has recently completed a study which shows that under the President's proposed legislation, average rate increases of nearly 10 percent will ensure. In fact, the study estimates that our largest utility, Public Service Indiana, would see a 21 percent rate increase; and Indianapolis Power and Light, which serves our largest city would see an 11 percent rate increase. Likewise, our coal industry in southern Indiana, which currently employs several thousand coal miners, estimates that the President's bill, S. 1490, will cost a fifth of those miners their jobs unless changes are made in that legislation.

As someone from the Midwest who potentially can experience a situation where we're asked to pay more than what we consider our fair share, I would implore the Chair and implore the Committee to consider the way that the country has responded to other national problems. When the savings and loan crisis hit, Indiana contributed very little to the problem and yet we, along with the other 49 States, will contribute our proportionate share to alleviating and dealing with the crisis that exists—mostly brought upon by savings and loan failures in a few States.

Likewise when Hurricane Hugo hit the Carolina coast, we in Indiana don't sit there and say, "Well that's a problem for South Carolina. We'll let them take care of it." We participate in sending relief and in paying the taxes necessary to send the funds to South Carolina because we know that there may be times in the future when catastrophe or economic disaster or other problems affect us and we would hope that the rest of the country would respond in an equitable way to deal with problems because we're one United States.

So, I raise that simply to leave you with the thought that Indiana Hoosiers are willing to do their fair share. We hope that you will carefully assess the impact on a region of the country that we think contributes a great deal to our Nation's global competitiveness. The Midwest is the manufacturing center of our country. The quality of our products and the competitiveness of our products overseas depends to a great extent on the ability to provide reasonable rates of power, to fuel the heavy duty manufacturing facilities, the steelmaking capacity and the auto-making capacity of the Midwest.

We don't want to enact a solution which does not recognize the contributions which our part of the country makes to our nation's industrial base and manufacturing base, which may be adversely affected if we don't provide a balanced solution to this problem.

Let me suggest two or three specific areas to which I think the committee could give some consideration. One is the area of clean coal technology. The President's bill and most other proposals allow for only a three year extension, and only for repowering tech-

nologies. Specific technologies are named which would be acceptable, yet we are undertaking in Indiana and other parts of the country experiments in clean coal technology which could potentially hold great promise in meeting needed emissions reduction standards.

One in particular, a Pure Air project in Hammond undertaken by Northern Indiana Public Service Company involves a situation where two units are hooked to the same scrubber and we think that because the Department of Energy has funded this clean coal experiment under Round 2, that it holds considerable promise.

We would not like to see these types of things excluded from qualification under the legislation and we think that flexibility, not just in repowering but the possibility of bringing new clean coal technologies on line ought to be allowed for in the legislation.

Secondly, in calculating the base line, we would hope that there would be some flexibility. Indiana steel producers suffered a serious recession in the very years that are proposed for a base line. Power consumption was down during that time. Now the steel industry has come back. Power consumption is up and making steel requires a tremendous amount of power and so if we fix base lines for a specific period, it may not take into account the economic conditions of that particular area at that particular time. So, we would ask you to consider flexibility in establishing a base line formula.

There are other areas I would like to have the opportunity to work with the Committee and to work with you, Mr. Chairman, and the distinguished Majority Leader in fashioning what I would think would be a fair and equitable solution to a national problem. As I said, Hoosiers want to do their fair share. We're willing to do our fair share and we would simply ask that you consider the unique circumstances that place us in a position to perhaps be impacted unfairly by whatever legislation may emerge.

So we look forward to working with you. We look forward to fashioning a proper solution to this problem in dealing not only with acid rain but mobile source emissions, ozone and other problems that the House is now undertaking, and having before us a bill which we can proudly claim makes significant advances in cleaning up the environment for this country, yet does so in an equitable way. I thank you for the opportunity to present my testimony to you this morning.

Senator BAUCUS. Thank you very much, Senator. I notice that the majority leader has arrived and I want to state publicly how much I appreciate the work he has done with me in the crafting of a bill that we jointly will introduce on acid rain.

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Senator MITCHELL. Thank you very much, Senator Baucus.

One year ago, I announced on the floor of the Senate that there would be no acid rain or clean air legislation last year. That was a sad day. Today, the outlook is dramatically different. I'm pleased that the prospects are good for action on clean air in this Congress.

For eight years I have been introducing acid rain legislation. For seven of those eight years, it was strongly opposed by the Adminis-

tration. This year there has been a reversal of direction. The Bush Administration deserves great credit for making a serious and credible proposal on acid rain.

Senator Baucus and I will introduce compromise acid rain legislation. In our proposal, we build on that of the President. We hope that our effort will be the basis for a bipartisan approach continuing a long tradition of this committee. Our proposal acknowledges past effort by States to deal with the problem and removes what one of our colleagues has termed, a cruel hoax on the West, that is percentage reduction.

While attempting to accommodate these and other concerns, we retain the cap on emissions proposed by the President. This cap is similar to provisions endorsed by this committee last year. I'm pleased that the President has this year endorsed the concept which I believe is critical to the success of the allowance system that the President has also proposed. As the President acknowledged in the findings and purposes in his acid rain title, acid rain is first and foremost a threat to public health.

Public health officials from all over the country testified repeatedly before this committee that acid rain controls are justified solely on the basis of health concerns not even taking into account other environmental concerns which are of course real and must be taken into account. One witness earlier this year claimed that 50,000 premature deaths each year in this country are attributable to airborne sulfates.

Without further action to control emissions, it is estimated that this number will increase significantly. Despite the many and serious differences that remain, I hope we can all work together to forge a compromise that is fair and reasonable to the affected States and which will at the same time protect our children and our environment from further damage.

Mr. Chairman, I commend you for your efforts. I know you have noted, as I have, the significant breakthrough in the House yesterday and the momentum that that gives toward action soon and I hope and expect that you will be able to lead this committee to taking action in the near future so that we can have a bill ready before deliberation and consideration and voting, perhaps later this year if at all possible.

Senator BAUCUS. Thank you very much, Mr. Leader. That would be very good if we could do that. I would like to report out a bill some time in November. If you can find time for floor action this year before we adjourn, that would be very, very helpful to this committee and certainly to those who are looking forward to cleaner air and if you can find room on the calendar, that would be appreciated.

Senator MITCHELL. I look forward to that and I again thank my colleagues for their courtesy, Mr. Chairman, and look forward to working with you.

Senator BAUCUS. Thank you very much. Senator Heinz, do you have a statement?

STATEMENT OF HON. JOHN HEINZ, U.S. SENATOR FROM THE
COMMONWEALTH OF PENNSYLVANIA

Senator HEINZ. Mr. Chairman, I do. I'll try and abbreviate it, keep this short, but I wanted to come and testify here today for one very important reason. I sense that we're on the threshold of making a major shift in the way the Congress looks at environmental issues and the proof, of course, is the President's proposal, the first such proposal made by a president that has chance of passage. He is going to break a 10-year logjam in the inability of any Administration or Congress to come up with a workable proposal and I think that that's true because of something I know Senator Wirth addressed earlier which is that President Bush together with, I might add, you and Senator Mitchell in your proposal that you're going to introduce, has done something that's never been done before.

That is, we have harnessed market forces as an ally in environmental protection, in cleaning up. We are all quite aware that the President's legislation allows the emitters of acid rain precursors to reduce emissions in the most efficient way possible and that has the advantage of course of both enhancing compliance and reducing cost and the marketable permits which under the Administration bill are called allowances is indeed as far as I can tell the first time that an explicit market mechanism has been applied in clean air legislation.

I commend the President for recognizing that it was going to take a new approach to overcome the opposition generated by costly solutions in other clean air proposals and I thank him, on behalf of my colleague, Tim Wirth and I, for giving a mention to the Project 88 study that Senator Wirth and I cosponsored last year as to how market-based solutions might be harnessed and utilized more broadly to reduce pollution.

I want to make one comment on the allowance program. As we all know, it permits emitters who over-reduce or who cut their sulfur emissions beneath the required emissions rate to sell those over-reductions in the forms of credits or they can utilize them themselves and if sold they would be sold, of course, to somebody who could not meet the emissions rate as cheaply as they might through buying the permit.

One of the attractions of these permits is to provide a verifiable means of ensuring compliance and that happens because the new sources of emissions that offset the acid rain precursors by either reducing emissions or purchasing permits will create a paper trail. EPA will be able to carefully track the flow of permits from the seller to the purchaser and more easily be able to ensure compliance among utilities. Of course, there's going to be a secondary market for these tradeable permits and that in essence is the market mechanism that we wanted to see.

The advantage of course is rather substantial. According to ICF, the efficiency of this approach can save between 1.7 and \$3.4 billion a year in utility compliance costs. That's a rather significant issue for me, Mr. Chairman, because I come from a State that is not only a very major producer of coal but we're a major recipient of acid rain and the problem for us is that ironically, not only do we have

a large number of jobs at risk under any acid rain proposal but some of our coal miners are among the most avid hunters and fishermen in our entire State and they do not want to have to make a choice between their jobs and having an environment that they can enjoy and which they can leave to their children.

In that connection, I'm most interested in the proposal that you and Senator Mitchell are in the process of finalizing. It tracks with some comments I made to the President when we were all down at the White House three or four days before his legislation was announced and that is to look harder at the prospect of focusing the first phase of emission reductions on a smaller number of power plants, 20 to 30, rather than the over 100 that he targets and thereby more rapidly create a more certain market for these tradeable permits.

The reason I say that is that when you have 107 sources all over the country with some restrictions on how broadly or widely those reductions may be traded, you run the risk of having an imperfect market, of having too few buyers and too few sellers. If on the other hand there is a more concentrated geographic area as I suspect you understand fully, Mr. Chairman, you have many more buyers and sellers in that same market and thereby enhance the likelihood that the tradeable permits will indeed trade at an appropriate market value.

So I want to express strong interest in the Baucus-Mitchell approach. I need more information about it but I do commend you for advancing that particular proposal.

Senator BAUCUS. Thank you very much, Senator. I'd like to ask both Senators Wirth and Heinz the following: some say that the allowance system which allows trading is a license to pollute. What's your answer to that?

Senator WIRTH. If we're going to pollute anyway, we're not going to get it down to zero pollution. That question assumes that the questioner believes you can get down to zero emissions. Of course, you can't. You've got to set a standard somewhere, how far are we going to come and you have decided very clearly to drop by 10 million tons and that's the goal. Having set that goal, then allow the marketplace to achieve that goal rather than to try to have it occur through some regulatory mechanism that treats every polluter just alike.

It's a question whose assumption is a fallacious one and consequently I think that looking at the flexibility of the tradeable system is a much more realistic and much more cost-effective way of going.

Senator HEINZ. Mr. Chairman, I'd like to respond also. I agree with everything Senator Wirth has said but I'd like to put that in a little historical perspective. The original market mechanism that most economists advanced for internalizing the cost of pollution control was the so-called effluent charge and the idea behind the effluent charge was that at so many dollars per pound of emission, that would in theory balance off the damage to the environment and it would be attractive for polluters not to pollute.

You would have those costs internalized in the equation. That became synonymous with the idea of buying the right to pollute and it needs to be pointed out that when you're talking about

tradeable permits as we are today, we're not talking about anybody having the right to pay for basically an open ended amount of pollution. What we are saying is that there is going to be a limit on pollution and we're going to allow the marketplace to decide how to best distribute the responsibility for staying under that limit and that's a very big difference from the old emission limitation and of course, under the old regimes that we had, you could say that current law permits polluters to pollute, indeed it does. I think the real question is what's different between what used to be advocated by the economists 10 and 15 years ago when you and I were in the House of Representatives and what we're talking about today.

Senator BAUCUS. The next question may or may not be a bit too theoretical. The more this system goes into effect and the more that utilities and other entities are trading, to what degree, if at all, do these allowances become property rights. Does that mean government could not reduce them without constituting a taking under the Constitution?

Senator WIRTH. We can make that decision any time and always have. We went through this debate when we were putting together Project 88. If we did this sort of thing, would we get ourselves into a situation where you couldn't make a change and the answer to that on all the precedents that have been set related to pollution control by the government is that the government has the right and does at any time set goals and changes those goals.

Now we may decide 20 years from now or 15 years from now to tighten down the ceiling from 12 million tons to whatever the next step may be. This allows you, it seems to me, a much greater flexibility to meet that ceiling.

Senator BAUCUS. The point is though that when they're bought and sold, do they then become property rights, by definition?

Senator HEINZ. Mr. Chairman, may I respond to that? Clearly they become a right that is good only within the context of the goal that the source, that is the purchaser of the permit has to live within and if the goal of let's say an emissions rate of 1.2 pounds of sulfur per million BTU is changed by legislative action, we have changed the value of that permit.

We may enhance it. We may reduce it. That is what Senator Wirth is saying when he says, we have the right to change the goals.

Senator BAUCUS. It's not a taking in your judgment.

Senator HEINZ. No, not at all.

Senator BAUCUS. You said, Senator Heinz, that you believe nearly 20 of the plants—

Senator HEINZ. I said between 20 and 30.

Senator BAUCUS. Whatever, at least a fewer number, tends to enhance the allowance system and that's because the allowances would be greater with fewer—that is they'd be smaller allowances with a greater number of plants? Usually the market is better when there are more entities—usually.

Senator HEINZ. Yes, Mr. Chairman, under the President's clean air proposal there are limitations on the trading of permits between air basins and utilities. As I understand the President's pro-

posal, it would not be possible for a utility in Pennsylvania to trade with one in Montana.

Senator BAUCUS. That's in the first phase.

Senator HEINZ. Yes, well that's what the 20 or 30 power plants or the 107 power plants are all about. That is the first phase. Now clearly that means that there are a smaller number of buyers and sellers within the geographical marketplace in which trades are permitted. That's why if you concentrate what has to be done in a more limited geographic area, it is more likely to have more buyers and sellers and therefore a more perfect market.

Now, I want to point out that there are some problems for those of us who live in such a limited geographic area because the costs on our geographic area may be higher and that's of concern but nonetheless if there is a way to avoid that problem, it's something that we're quite interested in.

Senator BAUCUS. Do all three of you support a 10 million ton reduction of SO_2 ?

Senator HEINZ. Off the 1980 baseline?

Senator BAUCUS. Yes.

Senator HEINZ. Yes.

Senator WIRTH. Yes, at this point, I would like to see it stronger myself but 10 gets us a way down the road.

Senator COATS. I wouldn't want to see it go any higher than 10 at this particular time and I would like to see some flexibility for reductions that have already been achieved and of course, that depends where you set the baseline and how you give credit for those reductions.

Senator BAUCUS. The President's bill has 10 million with the 1980 baseline. Do you support that?

Senator COATS. I think that's preferable to an alternative that sets a different baseline. As I indicated in my testimony, some flexibility in the baseline allowing various regions or States or utilities to choose might be in order to recognize differences in economic circumstances during the period of time that we're looking at.

Senator BAUCUS. I know a lot of Midwest utilities are interested in cost sharing. In your judgment, to what degree do you find this allowance system an adequate substitute for cost sharing?

Senator COATS. I think it holds a great deal of promise. I like the idea of the market based system because I think it holds out the most promise for creative solutions and advances in clean coal technology and other flexible means of reaching the goals. By specifying a certain type of reduction at certain plants with a certain type of technology I think forecloses the possibility of some real breakthroughs in the future and so the market-oriented approach provides in my opinion the most flexibility and I think one that holds a lot of promise.

Senator BAUCUS. I may have misunderstood you earlier but I thought I heard you to say that the President's bill which in effect is very similar to the bill Senator Mitchell and I are about to introduce, but you said that bill, if I understand you, with a cost to Indiana of about a 10 to 21 percent rate increase; is that right?

Senator COATS. Well, I indicated that there were two utilities in Indiana, one the largest utility in the State and another serving the largest city that, because of the mandates in the President's

bill are projecting rate increases significantly more than what was anticipated and of course, this was because these utilities are using high sulfur coal, a lot of it mined in Indiana and so we get a double impact, a decrease potentially in use of Indiana coal and a significant rate increase because of the mandated technology.

Senator BAUCUS. I asked because the EPA analysis shows Indiana, I guess average Statewide, will have a 3.8 percent rate increase. I wonder what the discrepancy might be.

Senator COATS. Well, I think we would question some of the assumptions made in the EPA study. The Indiana Department of Environmental Management is about three times the projected rate increase of the EPA study and I think those assumptions are that No. 1, governors would choose the lowest cost alternative when for political reasons they might not. I don't want to assume what our governor would do or other governors would do but for States with significant amounts of coal mining like Pennsylvania, Ohio, Indiana, West Virginia and so forth, the governor may feel constrained to choose an option which would result in potentially higher costs.

Secondly, even if all the utilities switched, the EPA did not take into account any potential increased cost in low sulfur coal or transportation rates that might increase as a result of transporting more low sulfur coal from a longer distance. So, a lot of the cost estimates are based on assumptions and we would question the assumptions made by EPA.

Senator BAUCUS. Did the State analysis include any reductions because of the allowance system, that is, reductions at the end that you might achieve or Indiana Utility might achieve through selling an allowance?

Senator COATS. I'm not sure. We think that was taken into consideration but I can't categorically say for sure that that was the case.

Senator BAUCUS. Thank you very much. I think Senator Lieberman has a statement and you've been very, very patient.

Senator WIRTH. Mr. Chairman, if I might, I wanted again to commend you on picking up the tradeable permit issue, and the President for doing so. I know that there has been some risk in that, that there are some groups who believe that that is simply a license to pollute. I think that the very good work done by the Environmental Defense Fund and the EPA and the ICF in looking at the economics of this have really gotten over that line and they deserve, I think, a commendation as well and I just wanted for the record to put that in right now.

I thank you very much.

Senator BAUCUS. Thank you, Senator. You both are also to be commended for pushing that project forward.

Senator HEINZ. Mr. Chairman, I'd just like to associate myself with the comments of my friend from Colorado.

Senator BAUCUS. Senator Lieberman.

OPENING STATEMENT OF HON. JOSEPH I. LIEBERMAN, U.S. SENATOR FROM THE STATE OF CONNECTICUT

Senator LIEBERMAN. Thank you, Mr. Chairman. I do have a statement. I'm not going to read it. I would ask that it be included in

the record and direct one question, to Senator Coats. Just by way of background which will not surprise you I'm sure, we in Connecticut and people from the Northeast generally have felt like victims in this story. Real assaults from acid rain on our natural environment and on buildings and increasingly it appears on our health and I gather that the majority leader was here earlier and recited some statistics that the experts are now telling us about the number of premature deaths, as many as 50,000 a year, some say 100,000, 150,000 from acid rain nationally.

We have been concerned enough about this in Connecticut to impose some pretty tough standards over the years on the sources of some of the same precursors of acid rain that we're dealing with in these bills, and as a result, Connecticut utility customers are paying higher costs for utility services than they otherwise would pay.

In other words, over the years we've asked our utilities to burn low sulfur fuels. My question is this. If we get into cost sharing for instance to lessen the burden on States like Indiana, aren't we asking people in Connecticut essentially to pay twice? I'm saying Connecticut because it's my State but there will be others that will fit the question. We've already paid to clean up the air. Aren't we being asked then to pay twice if we get into cost sharing?

Senator COATS. Senator, I would just ask you to consider two things in this. One is—and I don't know the answer. I don't know what percentage of power the State of Connecticut imports from other areas.

Senator LIEBERMAN. In our case, we're actually an exporter because we have a strong system. We have four nuclear powerplants, believe it or not.

Senator COATS. Well, many of the States—that leads to my second point here—many of the States that have had to have higher utility costs have imported power from States that generate the power and Connecticut may not be the best example. They've also had the ability to go ahead and produce power through nuclear power generation but as you know, that industry is literally been closed down and while States like Indiana have made attempts to meet their power needs and reduce their emissions through nuclear power, politically the process has been so difficult that it's impossible.

The permit process and so forth became so difficult that the costs were escalated out of any rational economic justification for going ahead with a plant and there were a number of other problems as you know. So that option has been foreclosed to us.

Second, I would point out the fact that not just Indiana and the Midwest, but the entire United States depends on the Midwest for generation of very basic manufacturing that requires a great deal of power. The manufacture of steel, the manufacture of automobiles, the kind of heavy duty manufacturing that benefits the entire Nation including consumers in Connecticut, and that is important to our ability to be competitive overseas as a Nation which obviously falls on all of us is a very real factor that I think needs to be considered.

I don't think any of us want to impose a solution which so impacts that ability to be competitive that it ends up bringing about a

much more difficult situation for all of our country in terms of our ability to trade overseas, dealing with our deficit, making American goods competitive not only in the United States but worldwide.

So, I guess I'm just asking for a consideration of that factor and the fact that for whatever the reason, this country has located that huge, heavy manufacturing base in the Midwest and having reasonable cost power to produce those products is very important to our ability to be competitive worldwide.

Senator LIEBERMAN. I promise you that consideration. In return, I ask your consideration of our concern about the possibility of essentially double billing for clean air.

I have one question for Senators Wirth and Heinz. On the basic notion of the trading of permits here, is there any danger—let me give this preface statement. We come to conclude in the Northeast that most of our acid rain problem comes from the Midwest. If we allow an open market, free market of trading of permits here, is there any danger that the sources of the acid rain that are hitting New England will acquire the permits to continue to do so? In other words, that reductions, if they're imposed on a national basis, may actually occur in plants other than the ones in the Midwest that seem to be the source of our problem?

Senator HEINZ. I don't think so, Senator Lieberman, for two reasons. The first is that the first wave of reductions is largely targeted to the area that I think you believe is responsible for most acid rain in the Northeast and second, there are as I understand it, restrictions within the President's proposal that have the effect that ensuring that you don't have those kind of bicoastal trades that you might be worried about.

So I think the short answer is no but there may be scientists who have more insights into that than I do.

Senator WIRTH. I would agree with that, Senator. I was just saying that I think that the 20 or 30 in the first wave that are targeted are ones that are going to be of the greatest concern to you and also of greatest concern to us as well for cost sharing reasons.

Then the next group it seems to me, you get into a much more flexible approach with the trading of permits, allowing people to then move to what is going to be for them the most cost effective approach and taking I think a lot of the burden off that Senator Coats was testifying about a little earlier this morning and testifying very justifiably. There is a very understandable set of economic concerns that is felt in the Middle West but if in fact they have the tools of tradeable permits, they can trade old versus new, they can make a variety of decisions.

Somebody that puts a scrubber on that brings their level of pollution far below say the equivalent of 10 million tons for their particular utility would be much better off and would be able to sell that and recapture some of the cost. I mean I think there's a fluidity there that's going to be very good. The ICF numbers suggest that a great deal of cost saving to consumers in the Middle West can occur through tradeable permits.

So, I think it's the best balance of all worlds for the first wave making large reductions and the second wave providing the kind of flexibility that takes a lot of the economic burden off. I've been looking at this for 15 years as have Senator Baucus and Senator

Heinz and it's the best kind of a balanced package that I've seen in that whole period of time.

Senator LIEBERMAN. Thank you.

[Senator Lieberman's statement follows:]

OPENING STATEMENT OF HON. JOSEPH I. LIEBERMAN, U.S. SENATOR FROM THE STATE OF CONNECTICUT

Thank you, Mr. Chairman for holding these hearings on the critical issue of acid rain.

I am especially pleased to be a member of this Committee during the session in which acid rain legislation will finally be signed into law. In my former life as Attorney General of the State of Connecticut, I joined with six other northeast states and four environmental groups to force EPA to require emission reductions from utilities producing sulfur dioxide which came down as acid rain in the northeast. Because the Federal Government refused to commit to new acid rain legislation, we were faced with the difficult task of proceeding under the structure of the current Clean Air Act.

That lawsuit itself was not successful. But I believe the broader message of our action reached the nation as a whole. And it reached the top levels of government. President Bush and Administrator Reilly, in the most significant part of their Clean Air package, have proposed acid rain legislation which truly protects public health and the environment and I commend them for their leadership. Of course, they follow in the footsteps of our Majority leader who has worked to enact acid rain legislation since 1981.

In my view, one of the lessons of the acid rain debate is that the support for environmental protection has perhaps the broadest base of any movement in this country. I became acutely aware of this during my campaign for the Senate. Environmental protection was important to everyone, from conservative Republicans to liberal Democrats.

In part this support comes from the fact that environmental protection, and particularly acid rain legislation, is both about preserving our critical natural resources and about public health. It is about Americans' desire to enjoy the lakes, streams and forests as an escape from the pressures of everyday life and about their need to protect the lungs of their children from dirty air.

The testimony that this Committee has heard about the health effects resulting from acid rain is truly startling. In a hearing on April 18, 1989, Dr. Balius Walker, Past President of the American Public Health Association, testified that he agreed with the Office of Technology Assessment's figure that currently 50,000 premature deaths per year are caused by the precursors to acid rain. In a follow-up letter, he advised the Committee that in the absence of acid rain legislation, we could expect 100-150,000 premature deaths per year. And he stated that this was a conservative figure.

Researchers at Harvard University have reached similar conclusions. Studies at Harvard's Energy and Environmental Policy Center repeatedly have found that air pollution is associated with up to 5 percent of death and illness—one out of every twenty deaths. These studies associated sulfates, which form sulfur dioxide, with the death rates.

The witnesses before our Committee also testified that acid deposition may create drinking water hazards because the increase in acidity of drinking water hazards because the increase in acidity of drinking water can dissolve metals such as lead and mercury. The health effects from exposure to lead are well known: headaches, dizziness, anemia, brain damage, general mental impairment and eventually, possible death. The experts are becoming increasingly concerned about the effects of lead on children's behavior and intelligence.

At the same time, the evidence about the effect of acid deposition on our natural resources—estuaries, lakes, streams, forests, waterfowl—is overwhelming.

In Connecticut and New York, one of our most precious resources is the Long Island Sound. We are doing everything possible to combat the pollution of the Sound. The experts tell us that more than 50 percent of the Sound's pollution is from acid rain deposition.

A 1988 study by the Environmental Defense Fund concluded that acid rain is a major source of nitrogen that stimulates excessive algae growth in waters along the East Coast; the resulting loss of oxygen in the water sometimes causes mass killings of aquatic life and contributes to long-term decline in fish and plants in estuaries.

Studies of the effect of acid rain on lakes, streams and aquatic life are devastating. EDF has concluded that acid rain altered about 4,000 lakes in the United States. This means that these lakes have become too acidic for most fish species to survive in them. A major new study by David Schindler in May of this year concludes that acid rain has eliminated many species of fish and organisms in the Northeast and Upper Midwest lakes.

I was heartened last week, however, to learn that the news is not all grim. EPA released the results of a study which show that if we act now to reduce sulfur emissions, the health of damaged lakes in the Northeast could be improved. Surface water quality might again be able to sustain aquatic life.

I concur with the comments of EPA that this latest scientific data simply reinforces the urgency of moving forward on acid rain legislation.

I look forward to the testimony today.

Senator BAUCUS. Over the years, I've tried to solve the acid rain puzzle and we're honored to have you here, Senator.

Senator SIMPSON. Thank you, Senator Baucus, my colleague from the north in Montana and you, too, have labored long and hard. I know I don't want to intrude at all on these three colleagues and I just had a question for Dan. Phil Sharp of Indiana had been very deeply involved in this. He's talked about a term, "cost sharing," in terms of including industrial SO_2 emissions in the required reductions and I'm sure not trying to bring up a technical point. I'd just be interested in your philosophy. Do you think that might be a way to reduce the economic impact on the Midwestern States?

He feels very strongly that it would, that you know, you've got to factor in the industrial emissions rather than just coal-fired utilities. Do you have any thought on that?

Senator COATS. I think he raises a very valid point. I think we would be remiss to think that if we just look to utility reduction as solving the problem that we might turn around a little later and say, now wait a minute, we've still got the problem. What went wrong? So, I think in terms of looking at this on a broader scope and on a national basis, we ought to be asking some questions and asking the scientists to give us some answers and so forth as to what that contribution is on the industrial side, where it comes from and what contribution it makes to the problem.

From that standpoint, that would include areas that are not now currently under consideration. I think there's some evidence to suggest that Texas, for instance, is probably one of the larger contributors to clean air problems that we have yet under the proposals under consideration, they're virtually untouched in terms of any requirement being imposed on them. I don't want to single out Texas but I think if we're going to take a national look at this, we ought to consider the national implications.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Thank you and I want to commend Senator Baucus. We've both been in it a long time. He now has a presentation to make to us in the form of the Mitchell-Baucus proposal or Baucus-Mitchell, whatever you want to call it, it's fine with me, but we've got things on the table now, things that are realistic and it's been a very grievous situation to be part of the committee and to continue to pass bills out of this committee unanimously which we knew—everyone knew—would never pass the U.S. Senate. Really an exercise in chicanery and foolery.

Now we have something. Something's going to go. We have to guide our way between the extremists on both sides. I detect a willingness to do that more than I've ever seen before here and I do appreciate the Chairman not including cost sharing in his proposal. I do appreciate the very honest effort dealing with percentage reduction, a bone in the craw of all of the West. I'm a little concerned about the cap provisions which I think could stifle growth in some of the relatively clean States of the West and the Sun Belt.

We have to find a compromise. It is not geographical or political struggling and I think this is a good effort. As I say, it has some things in it that concern me but it has a list of the 20 dirtiest plants that would be required to meet the stringent 1.1 standard and we have to be careful that we do not get into cost sharing or subsidies.

I'm ready to consider benefits. I'm not here peddling low sulfur coal. I've said that lots of times. We have to recognize what's going to happen to the high sulfur coal areas but we cannot let the debate break down into partisan wrangle. We've had the same legislative gridlock that we've had for the past eight years now, eight full years, and as I've said before, we should have simply accepted the work of the Commission on Clean Air. We'd have been a lot better off had we done that than diddling around for eight years. That was the work of Senator Gary Hart and he presented us with a very thoughtful package at that time in his legislative efforts.

So, I welcome the witnesses and I intend to participate and I want to thank Governor Rudy Perpich who is representing the Alliance for Acid Rain Control. That's a group that sought to develop a very cost effective acid rain compromise in the past and they've been very responsible. It was something that Bill Proxmire and I were involved in, the Proxmire-Simpson activity.

So thank you very much, Mr. Chairman, I think we can finally get something that's realistic and honest and without the hurrah and hype we get on both sides of this issue which is absolutely tedious to me.

Senator WIRTH. Senator Simpson.

Senator SIMPSON. Yes.

Senator WIRTH. If I might comment on the question that you asked Senator Coats earlier relating to Congressman Sharp's concern about perhaps moving this as well to industry sources, we have to remember that one, the primary goal is to go after the uncontrolled power plants and you mentioned the 20 of those in your statement.

Second, industry by industry, almost all of these industries are already regulated by the EPA. There already are emission control requirements there. Third, to expand from the power industry into other industries and use the tradeable permit concept would probably make it so complicated as to not to work.

So, while I understand the concerns that some might mention in trying to expand this beyond the utility industry, it seems to me that we already have controls there with EPA and to broaden it into tradeable permits would make it, I think—the concept of tradeable permits, which is very, very useful to our ability to compromise—would make it almost impossible to work.

Senator COATS. Senator Simpson, if I could just add a word on that because we've already talked about it, on the question of, whether this is the time to go forward, I think it clearly is. I think we have come through a period when proponents and opponents have been if not at the extreme, so far apart we haven't been able to reach a reasonable consensus as to go forward.

I think that dynamic has changed. I think we all recognize that and even those of us from States that are going to be heavily impacted want to participate in the process, contribute input into the process and try to strike a reasonable compromise here. I think it's time. I think it's necessary. I think we want to do our part. We just want you to hear our concerns and where reasonable accommodations can be made, we want that to be taken into account and then I think we can go forward with a bipartisan effort.

Senator SIMPSON. Mr. Chairman, I've often said that nothing would get resolved until the States that are most heavily affected participate in the debate and that debate never took place in this committee, never could, because there were no members on this committee to participate in the debate and now we will hear from Ohio and Indiana and Missouri and Illinois and we'll get a bill after we hear the pain that they're going to go through in how we best deal with our colleagues from those States.

Senator BAUCUS. Senator, I want to also echo your admonition that this be a compromise and in fact, that's what is, in fact happening. The bill that Senator Mitchell and I will introduce has as its base the President's bill. We start off with the President's bill. In fact, from the Western point of view, I think we improve upon the President's bill. So right off the top, it's bipartisan to take the President's bill and modify it in a way which I think is an improvement for everyone concerned, certainly for the West.

Second, Senator Mitchell and I compromised. This is not a Northeast acid rain bill. I had prevailed upon the majority leader to also adopt Western points of view. The best evidence is repealed percentage reduction. I don't know any Senator who has worked harder to repeal percentage reduction than the Senator from Wyoming and Senator Mitchell recognized that and agreed that percentage reduction, to level the playing field, should be repealed.

In addition, we give credit to those States who have already scrubbed more than 50 percent, that is, they do not have to further reduce. The emissions cap is something that was promoted very much by some other parts of the country. So in the spirit of compromise, that is certainly very much on the table and it certainly is part of the President's bill. The President has emissions cap in his bill as well.

I think compromise is in the air. Certainly the agreement yesterday between Congressman Waxman and Congressman Dingell on second round tailpipe standards is the best evidence of the most recent compromise. Frankly, I think that's going to help build momentum in the spirit of compromise so that we can address some of the concerns of the Senator from Indiana and others to reach a bill. I think there's no doubt that compromise is in the air this year, and we will therefore pass clean air legislation very quickly.

Senator WIRTH. Mr. Chairman, thank you very much for asking me to be with you and we look forward to working with you in every way we can in getting a piece of legislation.

Senator BAUCUS. If you have to leave, I appreciate that but I notice Senator Graham is here.

Senator WIRTH. Senator Graham just came from a Banking Committee meeting where I have to go, and I know he kept the seat warm there so I better run right over there. Thank you very much, Mr. Chairman.

Senator BAUCUS. Senator Graham.

OPENING STATEMENT OF HON. BOB GRAHAM, U.S. SENATOR FROM THE STATE OF FLORIDA

Senator GRAHAM. Thank you very much, Mr. Chairman. I have an opening statement which I would like to submit for the record. I apologize, as with Senator Wirth, moving between two committees that are in session at the same time. I would just like to supplement comments from the perspective of a growth State where there are a couple of distinguishing features.

One is the growth States tend to have newer plants since they were serving an expanding population and those newer plants were built at a time when there were more stringent environmental controls and therefore, the general level of emissions is at a higher standard in those growth States.

The economic consequences of benefitting by those more efficient plants have been that those States have been paying some of the highest utility rates in the Nation for a substantial period of time. Therefore, as a Senator from one of those States, I'm going to be concerned about how we balance the equities as between those States which are already paying very high rates because they have made this investment in more efficient plants as opposed to those States that are going to be entering that category as they now begin to increase the technological standards of their utility plants.

I'm very concerned about the proposals that those States that are already at a high level would have to purchase essentially pollution credits from States that are just coming into a new standard of compliance resulting in effectively paying twice, once when they improved their own plants and now paying a second time in order to be able to acquire credits from States that in many cases will still have more emissions per BTU than will the growth States but have done their improvement at a more current date.

Mr. Chairman, I agree with your statement that compromise is in the air. I believe that we have the ability to balance all of these interests in the Nation's interest and I look forward under your leadership to doing so.

[Senator Graham's statement follows:]

OPENING STATEMENT OF HON. BOB GRAHAM, U.S. SENATOR FROM THE STATE OF FLORIDA

Mr. Chairman, I appreciate your offering this opportunity for us to hear various witnesses testify on acid deposition legislation this week. In the interest of time, I will keep my remarks brief.

I am particularly interested to hear from witnesses today regarding their ideas on how to achieve an equitable approach to the reduction of precursors of acid rain.

While I am impressed by the innovation in both the Mitchell/Baucus bill and the administration bill, neither credits clean plants in Florida.

Many of our clean plants are penalized under these measures at two different points. The first is the use of the 1985 baseline year for units under 1.2. In 1985, several of our plants were cutting back on the use of oil and coal. Although many of these units are currently operating at half of the 1.2 mark, the rate was considerably lower in 1985 due to the cutbacks in fuel type. Under the two bills we are discussing, these clean utilities would have to reduce emissions—which are much more difficult to achieve when operating at an already low emission rate.

The message we are sending is that utilities should not have taken it upon themselves to reduce emissions voluntarily and that they certainly should not make the same mistake in the future. They should wait until their hand is forced, at which point, in this case, they would only have to cut back to 1.2.

The dilemma is similar for those units above 1.2, where the baseline is computed on fuel consumption between the years of 1985 to 1987. Not only did many of these units also cut back on coal and oil, but also on capacity use, buying power from out-of-state. Fuel consumption increased once they switch back and increased use of their capacity. Two sets of reductions would now be required under these bills.

Further penalties are felt in the cap on emissions growth which poses a particular problem for our high growth state. Emissions allowances can be purchased, if available, from those units currently over 1.2, which reduce below 1.2. Florida's clean units will be purchasing growth allowances from dirtier out-of-state plants—once again because the former have seen fit to reduce at an earlier date. Where is the equity in this system?

Mr. Chairman, I look forward to examining these and other questions with our witnesses over the next three days. Thank you again for affording this opportunity.

Senator COATS. Senator Graham, if I could just respond briefly to your comment. I appreciate your sensitivity to that and I guess the message I would leave with the committee is that hopefully we can avoid comparing simply making decisions on the basis of rates in our State versus rates in other States because if we don't take a broader national view, we in effect as I said earlier—potentially the competitiveness of our Nation as a whole and our ability to produce quality products at competitive prices and while I very much appreciate the concerns of Senator Graham and the impact on Florida, I would remind him that it is the steelmaking capacity, the machine tooling capacity, the auto assembly work that is so critical to producing the cars that the automobile dealers sell on the car lots in Sarasota and Tampa that are very important to the growth and the economy of Florida and all the other things that are manufactured in the Midwest or at least the raw material is put together there, that if we don't take a broader view in terms of the economic impact on those industries and the resulting impact on our ability to be competitive with the rest of the world, then we all suffer.

It's not just a matter of comparing household rates in Florida or household rates in Indiana or Montana or anywhere else. There needs to be an additional consideration for the cost of an automobile, the cost of steel, the cost of building a bridge, the cost of fabricating a warehouse or whatever that benefits all of us and that national view, I think, is important—not the only—but an important consideration as we look at trying to fashion a balanced piece of legislation. Mr. Chairman, I thank you again.

Senator BAUCUS. Senator, one final point. Senator Lieberman asked you a question about why those parts of the country that have already paid to clean up, why should they pay twice. The same phenomenon occurs in my State of Montana, that is, the major utility, Montana Power Company in conjunction with other

utilities has over the last 10, 15 years or so constructed about \$1.3 billion worth of power capacity and the rule of thumb is that about one third of that, close to 400 million, is due to environmental controls and some of that's water but most of that's air.

As a consequence, on average—those utilities basically got their SO₂ emissions down to 0.4 pounds per million BTU. One is up a little higher but the bulk is at about 0.4. So the ratepayers in the State of Montana—and we sell the bulk of our power out of State actually—those ratepayers are already paying to get that down to 0.4.

It's a phenomenon that occurs not only in my States but in a good deal of other States.

Senator COATS. I can understand that. I can understand your ratepayers saying that and I just keep repeating my point. We're one Nation and the health of one area affects the health of another area. We face very different economic circumstances, very different power requirements in the Midwest than you face in Montana or in Florida. We're not talking about generating power simply to light up the homes or fuel new technology light fabrication type industries.

We're talking about the power necessary to make steel, the power necessary to make automobiles, the heavy duty type of equipment that benefits all of our Nation and secondly, we're talking about an area of the country that was ravaged in the 1980s. While areas that you're representing have been prosperous in the 1980s, the Midwest went through its most difficult period in its history.

Senator BAUCUS. I don't think many Montanans would say that we've been prosperous in the 1980s, Senator.

The fact of the matter is, we probably will lose one congressional seat, to be down to only one out of two.

Senator COATS. Well, Mr. Chairman, we lost our seat in 1980. We're scheduled to potentially lose another in 1990. We have 300,000-400,000 steelworkers that will never have a job again and I would like to take you to the State of Indiana and show you what it contributes to the industrial capacity of this Nation. We have been ravaged and we've barely been able to keep our head above water let alone consider the ability of not just building one power plant but of revamping our entire system.

As I said, we want to do our part. We want to do it in a reasonable way, in a way that doesn't throw this Nation into a recession and make us non-competitive and put us through what we went through in the early 1980s.

Senator BAUCUS. I'm not going to get into a big argument with you here at all but we are trying to work out an agreement here to get a bill passed. Thank you very much.

Senator COATS. Thank you, Mr. Chairman.

Senator BAUCUS. Any other statements? Any questions? Before we conclude this morning's hearing, let me just say there were other Senators who were scheduled to testify but due to committee hearings and other scheduling requirements of their own, they are unable to attend. I also decided not to reschedule some of the afternoon witnesses to this morning because they'd already made commitments to testify in the afternoon.

Therefore, the hearing now will recess and reconvene at 2 o'clock as scheduled and those Senators who have not testified yet will testify either this afternoon or perhaps tomorrow. The hearing is recessed.

[Whereupon, at 10:39 a.m., the subcommittee recessed, to reconvene at 2:00 p.m. the same day.]

AFTERNOON SESSION

Senator LIEBERMAN. The hearing will come to order. Senator Glenn is our first witness and at the request of the Chairman, I wanted to formally convene and call on our distinguished colleague and friend, Senator John Glenn of Ohio to offer his testimony.

STATEMENT OF HON. JOHN GLENN, U.S. SENATOR FROM THE STATE OF OHIO

Senator GLENN. Thank you very much, Mr. Chairman. I do appreciate the opportunity to speak before the Subcommittee on Environmental Protection. We all have different duties around here and I do have to be over at the Armed Services Committee shortly on some of the conference with the House on the Defense Authorization Bill so I appreciate your willingness to go ahead and start the hearing.

Mr. Chairman and members of the subcommittee, the acid rain legislation you are considering will have very wide-ranging effects on both the environment and the economy of our Nation. There are several reasons why the Midwest and my State of Ohio in particular will be one of the most impacted areas and State in the Nation.

First, the cleanup plan will place a very harsh economic costs on the citizens of my State. Data compiled by the Department of Energy shows that Ohio electric rates already rank above the average for most States with residential rates ranging between the twelfth and seventeenth highest in the Nation. In fact, Ohioans pay nearly 6 percent of their disposable income on electricity costs. In addition, some of the lowest electric rates found in the country are paid by those States that have benefitted from various Federal subsidies which were paid for in part by Ohio taxpayers.

The States of Washington, Oregon, Idaho, Montana, Wyoming and Tennessee, for example, benefit from Federally-funded hydroelectric projects that have resulted in average rates just about half as high as those paid by Ohio consumers. Another reason Ohio's utility rates are higher than those in many other States is that Ohio rate payers have already spent more for air pollution control than any other single State.

In other words, our utilities have been responsible when they saw this whole problem developing. These aren't just our Ohio figures. According to the U.S. Department of Energy, Ohio utilities spent more than \$2.1 billion on air pollution control. That's just through 1987, two years ago, while all other States combined spent just over \$19 billion—that's 49 States with \$19 billion and Ohio at \$2.1 billion. So we lead the Nation in taking action with our utilities to try and cut down air pollution.

Second, much of the Midwest and Ohio's basic industry relies heavily on the use of electricity. For decades prior to any knowl-

edge about the acid rain phenomenon, Ohio and the Midwest industries supplied goods for this country such as cars and refrigerators, aluminum, that were sold around the world. The Midwest in other words, developed a revenue base that gave us the dollars at the Federal level to do many of the things we do for the rest of this Nation.

As a matter of fact, back home when I make the rounds of the editorial boards, I'm regularly criticized because Ohio is such a net contributor and we get less back than most other States. We rank among the 40 areas of getting back from the Federal Government less than we send in, but 30 years ago we didn't know that this acid rain was going to be here when this economic base was going to be developed for this country.

If Ohio industries experience substantial utility rate increases, their ability to compete in the international marketplace will be weakened. The job loss in my State and the economic impact in the U.S. and in our balance of trade will be felt nationwide. We in Ohio are at the heart of the industrial Midwest, and I believe that we can strike a balance in our environment and economic interest that will allow continued growth in our part of the country and in my State in particular.

Third, the impact of acid rain legislation will have very serious ramifications for the coal industry both in individual States and for the energy security of the Nation. The future of the high sulfur coal industry is a national concern. As I stated earlier, Ohio has already spent billions to reduce its emissions. These costs were borne by Ohio taxpayers at the same time as my State helped pay for development in the South and the West when those sections of the country needed water and aid and infrastructure.

The revenue from our part of the country helped do the things that needed to be done on rivers and harbors, waterways, the Central Arizona Water Project, dams, canals and everything else. Now we need some help too. Mr. Chairman, acid rain is a national problem and it needs a national solution and it needs national cost sharing. Viable acid rain legislation must include national cost sharing.

Mr. Chairman, we've helped other States. Now we need the help from other States. I have voted consistently for projects for the good of the country and in support of programs to States that are consistently net gainers in what they send to Washington. They don't send in nearly as much as the money that comes back. We're the other way around. We consistently send in more than we ever get back and that shows the industrial base that's been developed and the revenue base that is so important for our country.

The last thing I want to do is to pit one part of the country against another but Mr. Chairman, I can just tell you right now that I and my Midwest colleagues are going to be very hard pressed and hard nosed about voting any projects for other parts of our country if we are to somehow be ignored when we need help now.

The Midwest and Ohio should not bear a disproportionate burden for alleviating an environmental problem that resulted from industrialization and economic development that benefitted the entire Nation and which we did not have any idea back 30 years ago was

going to cause any problem for anyone. Ohio utilities are cleaning up their emissions as I indicated before you, Mr. Chairman, came in. We've put already \$2.1 billion by U.S. DOE figures—Department of Energy figures—into cleanup and that compares with 19 billion by the other 49 States combined.

We lead the Nation in money that's already been expended trying to clean up the situation on air pollution. Those are figures up through 1987. Our utilities are cleaning up their emissions. Ohio rate payers are paying higher than average residential electric rates now and Ohio industries must remain competitive and that's not something I say just as a loyal Ohioan. One twelfth of our jobs in Ohio depend on export out of this country. We're hard pressed on export out of this country right now and to make us even less competitive just doesn't make much sense.

So Mr. Chairman and members of the subcommittee, I urge you to certainly include cost sharing in your acid rain legislation. I feel it's neither fair nor necessary to force the Midwest and Ohio rate payers and utility industry and coal miners to shoulder more than their fair share of this burden of reducing acid rain. Thank you very much.

Senator BAUCUS. Thank you very much, Senator, I apologize for my absence when you first began your testimony. As you know, we're in conference trying to straighten out a difficult tax issue.

I wondered though to what degree you find the allowance system helps move toward a kind of cost sharing because obviously those utilities who do reduce their emissions can then sell their allowances to help pay for the reduced emissions.

Senator GLENN. I favored the transfer of allowances. I think that makes a more flexible system. I just hope that there is enough allowance there that it's worth trading. That's our major concern, that we do something that really will help us out. As I indicated in the first part of my statement here, we feel that if these things can be phased in, if the numbers that were in the Administration bill can be brought down to a little bit more of an acceptable level, we can stretch this thing out a little bit, provide a base that starts back early enough, then I think we're really on the trail of doing something very good in this area of cleanup.

If we make it so burdensome that we're just unable to keep up with it though, it's going to hurt us measurably. It's going to hurt our employment, going to hurt our industries in how competitive they will remain in their international sales and in competition with other parts of the country and that's why we feel it's—while I favor the transfer of allowances or making those as flexible as possible, that's not the final answer to the whole thing.

Senator BAUCUS. Do you favor or tend to agree that the amount of SO₂ reduction should be 10 million tons by the year 2000 with 1980 as a base?

Senator GLENN. Most of the analysis that we have seen so far and we've had our own people in Ohio both in the industry and separate analyses being run, indicate that that's probably going to impact us pretty hard. We'd prefer to see it back around 8 million if we could and a 1980 base.

Now we had a considerable cleanup started even before that time period, so we wouldn't necessarily get credit for the good work that

some of our utilities did in trying to approach this problem very early. We prefer to see the final compliance date stretched out beyond what was in the proposed legislation of the Administration in the year 2000, I believe.

Senator BAUCUS. Correct. The year 2000.

Senator GLENN. We feel if it could go out to 2003 that would be a measurable help.

Senator BAUCUS. In the main, do you tend to agree with the Administration's bill? Do you want it revised somewhat? Or are you just unalterably opposed to the Administration bill?

Senator GLENN. I'd be opposed to it with the current numbers in it and the dates.

Senator BAUCUS. Thank you. Thank you very much, Senator. I know you have a very busy schedule and again, I apologize.

Senator GLENN. Thank you very much.

Senator BAUCUS. Thank you, Senator.

Senator LIEBERMAN. No questions.

Senator BAUCUS. Our next panel includes Mr. Richard Trumka who's President of the United Mine Workers, Mr. Harry Storey, President of the Alliance for Clean Energy, Dave Hawkins, Senior Staff Attorney for the National Clean Air Coalition and Richard Lawson, President of the National Coal Association.

Gentleman, why don't you proceed. I welcome all of you. I also note—is this the first time you've testified, Mr. Trumka, on acid rain legislation; is that correct, at least before this committee?

Mr. TRUMKA. Before this committee, yes.

Senator BAUCUS. Well, we are very honored to have you here. Why don't you proceed?

STATEMENT OF RICHARD TRUMKA, PRESIDENT, UNITED MINE WORKERS OF AMERICA

Mr. TRUMKA. Mr. Chairman, I'd like to thank you and the other members of the subcommittee for giving me the opportunity to present the views of the United Mine Workers of America on proposed acid rain legislation.

For the first time in a decade, both the President and the Congress are fully engaged in the effort to pass clean air legislation. The question before this committee then is not whether to reduce SO₂ emissions that cause acid rain nor even how much to reduce it nor by when. I think it's safe to say that a consensus has developed over the need to reduce SO₂ emissions by 50 percent or 10 million tons over the next decade.

Most control advocates however continue to ignore the fact that the Administration's bill will also result in massive long-term unemployment in the high sulfur coal industry and economic catastrophe for communities throughout northern Appalachia and the Midwest. Congress has yet to come to grips with the question of how to achieve significant and lasting reductions while at the same time minimizing the impact on coal State economies. The fact is that the Administration's bill causes far more economic disruption and regional hardship than is necessary to clean up our air.

In testimony before Congress, Administration witnesses have admitted that S. 1490 will cause significant unemployment, not just

in coal mining but in businesses throughout Appalachia and the Midwest. Permanent unemployment for tens of thousands of our citizens is not the inevitable result of tough acid rain controls yet this would surely follow from the passage of S. 1490.

Similar if not greater SO₂ reductions can be achieved without the massive dislocations caused by the Chafee bill and that's why I believe that the compromise offered by Senators Mitchell and the Chairman is a significant step in that direction. Mr. Chairman, the effect of ill-conceived acid rain legislation will have on our Nation's miners and their communities must also be viewed in the context of an industry already racked by massive unemployment.

In 1979, approximately 250,000 coal miners were at work in the United States. Today, coal mining employs about 143,000 workers, a 43 percent decline in this decade. The precarious state of the coal industry requires that we weigh carefully the effect of acid rain proposals on coal production and employment. Our analysis of S. 1490 indicates that coal production shifts will range between 110 and 150 million tons with coal mining job losses between 22,000 and 30,000 jobs.

Though the Administration admits to only 17,000 direct coal mining job losses, it has also stated that total unemployment due to S. 1490 will be double or triple the number of coal miners who become jobless. While much of this unemployment will center in the high sulfur coal fields of northern Appalachia and the Midwest, some displacement would also occur in central and southern Appalachia.

Regardless of where the coal market might move, those miners would be unemployed. Even without acid rain controls, many of these areas have depressed economies. So prospects for alternative employment are and will be bleak. The economic costs to the miners' families will be staggering. Under S. 1490, over \$1 billion in direct income will be lost by coal miners and coal field economies will be hit by an additional loss of over 2.5 billion from industries that now provide support services and retail sales to the local work force.

Proponents of this approach assert that coal State Governors would take action to prevent economic disruption to coal markets and mining jobs but this ignores the reality that coal state Governors would be subject to the same identical conflicting pressures that have deadlocked Congress for nearly a decade. Moreover, their ability to protect coal jobs is limited. Some of the States with the greatest potential for employment losses consume only a small portion of their own coal production.

West Virginia for example, burned 34 million tons of steam coal in 1987 but produced over 136 million tons. Unemployment in the coal fields would be accompanied by significant electric rate increases for residential and commercial consumers. Higher electricity prices would in turn further dampen economic growth because marginal industries who have heavily depended upon electricity would be forced to relocate to States with lower operating costs.

Mr. Chairman, the consequences I've described are the inevitable result of acid rain control strategies that isolate the regions that produce and burn most of our high sulfur coal. This strategy treats acid rain as essentially a regional problem despite the fact that un-

controlled SO₂ emissions have become a problem in almost every region. Damage from acid deposition is not confined to the Northeast yet the approach of S. 1490 is to assign to the Midwest and a few neighboring States a vastly disproportionate share of the clean-up responsibility.

The fact is that under S. 1490, nine States in the Midwest and the Southeast are being asked to make reductions well above their proportionate contribution to the problem of acid rain. In 1985, these States were responsible for a little over 50 percent of the total emissions of SO₂ but under the Administration's approach, they are called upon to make over a 70 percent reduction.

Senator BAUCUS. We'll have to ask you to wrap it up, Rich, as best you can.

Mr. TRUMKA. I certainly will, sir. I just point to something that Senator Mitchell said. At the end of the last Congress, he said that a policy that imposes huge job losses in West Virginia or Ohio or Kentucky is no more acceptable than a policy that imposes heavy pollution damage on Maine or Vermont or North Carolina and I think acting upon that belief he in fact showed that those competing interests can be balanced. I would ask the committee to attempt to do that as you have in the past and we look forward to working with this committee and the Members of the Senate to balance those interests.

Senator BAUCUS. Thank you very much.

Mr. Hawkins.

STATEMENT OF DAVID HAWKINS, SENIOR STAFF ATTORNEY, NATIONAL CLEAN AIR COALITION

Mr. HAWKINS. Thank you, Mr. Chairman, Senator Lieberman. For the record, my name is David Hawkins. I work at the Natural Resources Defense Council which is a member of the National Clean Air Coalition. I'm here today on behalf of the Coalition, its three dozen member organizations and the millions of Americans who belong to those organizations.

The first point that I'd like to make and I'll highlight my prepared statement, is it's nice to be here not to debate whether to control acid rain but to talk about how. In the past, opponents of control have raised a number of arguments—costs, equity consideration, technical feasibility—as arguments against controlling acid rain with particular approaches. Our position in the Coalition has always been that these issues could be resolved if all the parties approached the negotiations in an atmosphere of mutual trust and good faith.

For our part, we've always been willing to support the product of those negotiations as long as the fundamental goal of acid rain control was not lost in the process. Over time, too many interests sought not action but delay. Too few approached the acid rain problem from the point of view of the victims of acid rain. So let me say a word about those victims: thousands of lakes and streams dead, dying or threatened by acid rain, recreational resources and recreation industry jobs lost, urban infrastructure, historical artifacts and monuments, drinking water supplies, all damaged, forests and crops damaged and livelihoods threatened.

In every case, acid rain is the culprit or a prime suspect. Well, let me address some of the major issues that remain and with special attention to the Bush Administration proposal as embodied in S. 1490 and the proposed Baucus-Mitchell Bill.

Turning first to the question of tonnage, in our view, the proposed Mitchell-Baucus bill improves the Administration's bill in a number of important respects. First, the proposed bill contains a true NO_x, nitrogen oxide reduction requirement from today's levels. Second, phase one of the Mitchell-Baucus bill focuses on a smaller number of plants, increasing certainty and enforceability at the start of the program. Third, Mitchell-Baucus proposal provides compliance extensions for repowering projects, it rejects the broad and unnecessary exemptions for so-called clean coal technology from performance standards and other air quality regulations.

These broad exemptions are found in the Administration bill and they are extremely broad. They would for example, permit a large, new coal-fired generator to be built completely exempt from Federal new source performance standards. They would permit wholesale exemptions from the Act visibility, prevention of significant deterioration and non-attainment review programs for projects that would significantly increase emissions from today's levels.

This committee should ask the Administration and other witnesses why it is appropriate to exempt technologies that are promoted as clean from existing legal requirements that they in fact be clean. We've criticized the Administration bill for taking credit for 1 million tons of industrial sulfur dioxide emission reductions, yet relying only on computer predictions rather than legal requirements to achieve those reductions.

We urge that the Mitchell-Baucus bill include requirements that will direct EPA to establish legally enforceable allowances for total industrial sulfur oxide emissions at a level assumed in the President's bill—1 million tons below 1980 levels.

Let me talk about the emission allowance system and the cap. The market incentive and emission allowance system is an approach long advocated by industry and academic analysts as a means to achieve a stated environmental objective with maximum flexibility and minimum compliance costs. Industry has said, tell us the level of environmental protection you want and give us the ability to choose the most effective means to reach that level. Both the Administration and Mitchell-Baucus bills have been designed to allow industry this flexibility. The environmental objective is clear: reduce national sulfur oxide emissions to a level 10 million tons below 1980 levels and hold them at that level.

The means are flexible and market oriented. The keystone of the environmental objective and thus of the allowance system itself is the requirement that once total sulfur oxide emission reductions are reduced that they not be increased again. This provision, dubbed the cap, is of central importance. Like an arch without a keystone, the reduction program and the allowance system without a cap, could not bear its own weight and would collapse.

Without a cap, there is no clear environmental objective, only a temporary reduction in damage followed by a steady return of that damage. It's particularly bad form for the very industries that have called for a structure of solid environmental objectives and flexible

means to now argue for a weakening or elimination of the cap. It is the cap that delivers on the environmental objective.

Those who claim that the cap may constrain the ability to build new plants are simply ignoring the numbers. In the absence of a control program, EPA predicts total U.S. utility SO₂ emission changes between the year 2000 and 2010 ranging from a reduction of 1.4 million tons to an increase of 1.3 million tons. Now with a cap in effect and I'll try to wrap up quickly, even the high growth forecast would be lower than the 1.3 million tons because of the added incentives for better control and for better energy efficiency.

To offset whatever the remaining SO₂ emission increases from new generation might be, the utility industry and other industries would be able to draw on a pool of over 14 million tons of sulfur oxides that will still be emitted even after the roll back program is completed. These factors tell us that it will be not difficult to comply with a cap. The cap is essential for the environmental integrity of the program. It will put in place the energies that we need to sustain economic development and to have an environment that is not further degraded.

This is one of the most critical provisions of the bill and we urge its retention. Thank you very much.

Senator BAUCUS. Thank you very much, Mr. Hawkins.

Next, Mr. Storey.

STATEMENT OF HARRY STOREY, PRESIDENT, ALLIANCE FOR CLEAN ENERGY

Mr. STOREY. Thank you. Mr. Chairman and members of the committee, I am Harry Storey, President of the Alliance for Clean Energy or ACE as we are known.

ACE is a coalition of 25 Eastern and Western low sulfur coal producers, users and transporting companies. We are pleased to be able to give our testimony, our opportunity to discuss with you our position on acid rain control legislation today. ACE formed six years ago for the sole purpose of dealing with the issue of acid rain legislation. Our objective has been to make sure that certain principles were included in any acid rain legislation.

These principles included freedom of choice for utilities to decide how they will make emission reductions, a cost effective, flexible approach and a polluter pays approach. We believe acid rain legislation should set emission standards that Congress and the Administration deems necessary to protect and improve the environment and then grant industry total flexibility in meeting the allowed emission levels.

This approach will result in electric consumers getting the maximum environmental benefits for each dollar they pay. Legislation has been offered in the past which was purported to be freedom of choice but the standards were set so low that the only way the standards would be met was through scrubbing. Consumers should not be required to pay more for environmental protection than they need to and they shouldn't be required to pay for the cost of market protection in the guise of forced scrubbing.

On August 2, 1989, ACE announced its support of the Administration's acid rain title of its clean air legislation, S. 1490. We ap-

plauded it because it is a freedom of choice approach and the trading mechanism allows for flexibility in meeting these tough standards. It takes a polluter pays approach. In offering our support, however, we offered the following amendments to improve the bill. We believe that the provisions in S. 1490 which applies to the cleanest plants in the country, new source performance standard plants, should be changed to allow these plants to operate at their permitted rate. These plants have already paid to clean up and are meeting stringent standards.

The bill also impacts more severely on some utility systems than others because of the 1985, 1986, 1987 base year which determines the SO₂ tonnage a plant can emit after the year 2000. We recommend that utilities be given the opportunity to select three consecutive years between 1980 and 1987 as their base years. In the long run, the 100 percent offset for greenfield plants or new plants in S. 1490 could result in the decreased use of our Nation's most abundant energy source, coal.

This provision causes some concern for those companies, utilities and dependent power producers who plan to construct new generating facilities. Their concern is one of availability of the cost and the cost of emission offsets. As a compromise, we recommend that this 100 percent offset cap be changed to allow new generating facilities to emit at a rate of 0.3 pounds of SO₂ per million BTUs without offsets.

This change would guarantee that no electric generating facility would be delayed or cancelled due to the lack or cost of emission offsets. This standard represents a 50 percent reduction in SO₂ emissions of current NSPS plants and also a 75 percent reduction from the NSPS standard of 1.2 pounds per million BTUs. S. 1490 is a stringent environmental bill that will be difficult and costly to meet but because this bill allows the reduction to be met in a cost effective way, it can be accomplished without undue economic hardship on any region of the country.

An example of the flexibility contained in this bill is the 2.5 pounds per million BTUs limit in the first phase reduced by December, 1995. The 4.5 to 5 million ton reduction in the first phase will be accomplished by meeting a 2.5 pound per million BTU standard at approximately 107 plants in 20 States. These plants will be allowed to select from a market basket of control options and in addition, they can use cost effective emission averaging within their system.

We're pleased, Senator Baucus, that your bill is very similar in structure to the Administration's bill and particularly, we applaud your provision to repeal the percentage reduction act which has imposed substantial and unnecessary cost on consumers all in an effort to manipulate coal markets to the disadvantage of Western and Eastern low sulfur coal.

We are also pleased that you have modified the 1985 emissions rate cap. It appears that the major difference in your bill and in the Administration's is that the first phase of yours name 20 plants in 11 States which are required to meet a 1.1 pound per million BTU standard by January the 1st, 1995. This will concentrate the economic impact on a much smaller area, reduce the number of

compliance options, and compress the compliance time, therefore increasing the cost of reductions.

If our understanding of the language in your bill is correct, you have gone in the right direction to correct this inequity by allowing utility systems to trade systemwide. We recommend and we understand that you have strengthened the trading system by allowing Phase II plants to opt into the trade in Phase 1. This will result in earlier SO₂ emission reductions. Since this reduction will be made earlier, the cumulative SO₂ reductions will be greater. Of course, there has to be a carrot provided for plants to make these early reductions. They should be given permits for early reductions which can be used for trading in their Phase 2 reduction requirements and beyond.

If there are only 20 plants in the program, there would be virtually no one to trade emissions with. Therefore, utility compliance options will be limited to scrubbing or using extremely low sulfur fuels which will greatly limit the option of fuel switching as a means of compliance.

Senator BAUCUS. Please summarize.

Mr. STOREY. In summary, the objective, Senator Baucus of both bills is the same, a 10 million ton SO₂ reduction in approximately 10 years. The only question remaining is not one of the final destination but rather what path we select to travel. Again, we urge you to support a free market approach, maximum flexibility of control options and timing.

We therefore recommend that you substitute Phase 1 from S. 1490 or at the very least, and we understand that you have, a true trading system by allowing more plants to participate in Phase 1.

Thank you. I'd be happy to try to answer any questions that you or the committee may have.

Senator BAUCUS. Thank you very much, Mr. Storey.

Mr. Lawson.

STATEMENT OF RICHARD LAWSON, PRESIDENT, NATIONAL COAL ASSOCIATION

Mr. LAWSON. Senator, members of the committee, my name is Richard Lawson. I'm the president of the National Coal Association and we represent coal producers from across the country. Our members operate in all producing regions of the country and mine all qualities of coal. We appreciate the opportunity to appear here today and to participate in this important series of hearings.

The coal industry supports the goals of cleaner air, make no doubt about that. Over the past two decades, the industry with our major customer, the utility industry, has worked to achieve this goal with a success that has been recognized by the EPA. However, we also recognize that environmental goals must be founded on sound science and must be reasonably balanced with the equally important goals of energy security and economic growth.

The National Energy Strategy currently being drafted by the Department of Energy must recognize the importance of this balance and the acid rain proposals now pending would predetermine the direction of energy policy. Indeed, amendments to the Clean Air Act as now drafted would also become the de facto industrial policy

of the United States. We urge the subcommittee to look carefully at the effect that this legislation will have on energy security, on the potential for economic growth and stability and on our international competitiveness before taking final action.

Reliable, adequate and reasonably priced energy supplies are imperative to sustain long-term economic growth but in the United States, both energy supplies and thus continuing economic growth are vulnerable on two fronts: through the continuing increase in dependence on imported energy and from pending shortages of electrical generating capacity. The United States currently imports over one half of the oil and petroleum-based products used. Domestic oil production is at its lowest level in over a decade and our dependence on imports can only increase.

A report released last week by the National Electric Reliability Council pointed out the very real possibility of electrical generating capacity shortages by the early 1990s in the eastern United States if actions are not taken quickly to increase electricity supplies. Unnecessarily restrictive legislation such as that now pending can only exacerbate our energy vulnerability and make it much more difficult and costly to meet energy and electricity needs in the future.

Coal which is the fuel that is used to generate almost 60 percent of the electricity produced in the United States today is the lowest cost fuel available to the electrical utility industry and has enabled coal dependent utilities to keep electrical rates down. Under any acid rain proposal costs, electrical rates would rise sharply in coal dependent areas. The increased costs and the regulatory requirements imposed on these areas would mean a loss of jobs and a loss of energy intensive industries and offshore locations.

Our international competitiveness would be dealt a severe blow. Several supporters of these proposals have suggested that the increase in electric rates that would be precipitated by acid rain legislation in the industrial heartland of America would not be harmful since rates in these manufacturing dependent areas are now significantly lower than those in the remainder of the country. They argue that these actions would only level out rates through the country.

We believe that such a philosophy is counterproductive to our Nation's competitive performance potential in the international marketplace and rather than increasing electric rates in the States which now enjoy the benefits of cheap energy, we should be enacting a national energy policy designed to decrease electric rates and energy costs across the entire Nation.

The President's program is advertised as a 10 million ton reduction in SO_2 emissions relative to 1980 levels. However, as currently constructed the proposal would result in an approximate 13 million ton reduction from 1980 levels and utilities alone would be forced to reduce emissions by almost 10 million tons. The bill does not fully consider either the emission reductions already made by the industrial sector or the potential for further reductions by industry.

Establishing constraints designed to achieve only the stated 10 million ton reduction would permit both the elimination of the tonnage cap on emissions from existing plants and the offsets required

of new capacity. These actions alone would reduce costs of compliance by at least 30 percent while still achieving 10 million tons by 2000.

Tonnage rate caps on existing plants will sharply increase the costs of compliance on affected utilities and reduce the flexibility a utility has in meeting electrical demand, especially over the short term. The tonnage cap should be eliminated and the rate cap should be no lower than the permitted standard for NSPS plants.

The requirement to retain offsets for new generating sources will impose major restrictions on energy production and use as they effectively preclude coal as a new generating option for either a utility or a non-utility generator. The offset requirement will be especially detrimental to utilities in the West and Southwest where new NSPS plants are located and where few credits will be available to use for new capacity.

Market penetration of clean coal technologies which are the future of the coal industry and must be a cornerstone of a solid national energy policy is likely to be eliminated under the President's plan despite the three-year time extension in compliance for selected technologies and the suggested incentives now in the bill for CCT deployment.

CCTs will not be commercially available in the time frame in which a utility must make the decisions and file plans to comply with the deadlines and standards now proposed. Additionally, the requirements to meet Phase 1 deadlines will remove many of the potential candidates for repowering in the marketplace.

To summarize, Mr. Chairman, we are not debating the issue of, if SO₂ emissions will be reduced. We're debating the issue of when and at what cost. As our statement points out, the interim report of the National Acid Precipitation Assessment Program concluded that we do not now face an environmental crisis that demands immediate preemptive action. We have time for clean coal technology.

Senator BAUCUS. Please wrap up if you can, Mr. Lawson.

Mr. LAWSON. With the NAPAP conclusions in mind, we urge the committee to support an extension of time for the Phase II installations of clean coal. We look forward to working with all of the members in resolving these difficult issues.

Senator BAUCUS. As I understand it, Mr. Lawson, you're not in favor of the cap which will also be contained in the bill to be introduced by Senator Mitchell and myself; is that correct?

Mr. LAWSON. Yes.

Senator BAUCUS. What's your reaction to Mr. Hawkins' point that, the cap is necessary in order for allowance trading to be effective?

Mr. LAWSON. Well, I think there are many aspects of the allowance trading process that need to be more fully examined but from our standpoint, a cap at this particular point in time, some 12 to 15 years before the actual date presumes upon the science that is still to come. We have plenty of time to determine if a cap at that out period is needed. The most important thing from our standpoint is that coal represents the most economical and efficient energy source. We believe that we have the ability to contain emissions with whatever law is passed and our record in the past has been that we comply with whatever legislation has been produced.

So we see no reason at this time to create a cap giving our country a constrained position economically vis a vis the rest of the world.

Senator BAUCUS. Do you support the 10 million ton reduction?

Mr. LAWSON. Yes. We support the 10 million ton reduction. We'd like to see the time of that reduction to be at the year 2005 but we can make, we believe, in the year 2000.

Senator BAUCUS. Maybe I misunderstood Mr. Hawkins, but in his testimony he said that there will be a 14 million ton pool for growth. Do you have a reaction to that statement?

Mr. LAWSON. I have no information to analyze what Mr. Hawkins said.

Senator BAUCUS. Mr. Hawkins, what's the basis of that statement?

Mr. HAWKINS. That is taken from the EPA analysis of the Administration bill, Senator. The 10 million ton reductions, once accomplished, will leave approximately 9.3 million tons of remaining emissions in the utility sector—sulfur dioxide—and approximately 5 million tons in the industrial sector for a total of 14 million tons remaining SO₂ emissions that will continue to be put into the air. That total tonnage is a pool from which additional reductions can be accomplished and as I indicated in my prepared statement, there are extremely cost effective ways to accomplish those further reductions.

For example, repowering an existing coal fired unit that is emitting at 1.2 pounds with a new repowered clean coal technology unit which its proponents say can achieve 95 percent control, that will free up allowances for somewhere between 4,000 to an additional 30,000 megawatts of capacity. There isn't a problem. You can trade in these old plants, repower them, and come up with lots of additional allowances. You don't need to make the argument that I understand General Lawson to be making that coal and the environmental protection objectives of the President's bill can't be matched. They can.

Senator BAUCUS. Mr. Storey, would a cap tend to be harmful to or helpful to or neutral with respect to low sulfur coal compared with high sulfur coal?

Mr. STOREY. Senator, I guess if you looked at it from a very selfish perspective of just low sulfur coal and forgot the people who are using the coal, the utilities and the consumers who are paying for it, I truthfully would have to answer that question that a cap probably would help low sulfur coal, for the simple reason that as we look at the three caps that are involved in this bill, low sulfur coal certainly would help in all of those areas to either reduce the emissions and or to reduce the amount obviously that they would have to offset.

Senator BAUCUS. Does ACE then support the cap?

Mr. STOREY. We do not. As I pointed out to you, we would like to see some flexibility in those caps for the utilities. In the class of 1985, 1986, 1987, we find that some utilities are going to be hurt severely because of operational problems and it would be well to give them a choice of three consecutive years, not eliminate the cap. In the 1985 new source performance standard plants, there are probably a couple or maybe more than that, maybe two or three,

that probably would not be able to get the low sulfur fuel or lower sulfur fuel which they were using in 1985 and certainly by letting them emit up to that permitted level of 1985, it would relieve that problem.

Then in new plants, we have suggested a 0.3 emission standard because this would not prohibit any plant, any new generating facility in the country from coming on stream, even if they could not buy caps or if—excuse me—if those offsets were not available. So we would like to see, if you please, some compromise in the caps, not the elimination of the caps.

Senator BAUCUS. Mr. Trumka, you mentioned that the bill to be introduced by Senator Mitchell and myself is an improvement over the President's bill. I wonder if you would like to comment on why you think so.

Mr. TRUMKA. Well, first of all, by going to 20 plants instead of 107 plants, I think it minimizes cost and it also would advance further the interests of clean coal technology. Since in fact you would have 80 plants left at the year 2000 to use any technology that's available, I think it would in fact very much improve and advance the interests of clean coal technology and also keep costs down.

I think it has to be coupled with some cost sharing that isn't in there that I mention in my full statement that I would be glad to talk a little bit further about if you're interested in that.

Senator BAUCUS. My time is up.

Senator Lieberman.

Senator LIEBERMAN. Thank you, Mr. Chairman.

Mr. Lawson, a question about clean coal technology. If clean coal technology produces or will produce lower rates of emission, why do you think it's necessary to provide exemptions from the Clean Air Act as a result of a use of clean coal technology?

Mr. LAWSON. I think most of those exemptions have to do with the phase that we happen to be in at that particular time. We've asked for the particular portions of the legislation in order to accelerate our conversion from our current situation across the country, to provide the incentives for the utility industry across the board to proceed to the use of clean coal technology and to establish the base for the export of those technologies on a worldwide basis.

We believe that coal will be in at least the first 30 years of the next century the most used fuel on the face of this earth. That's just because of its geographical distribution and the general way that it's being handled in other countries. We believe that clean coal technology here provides us with an opportunity, environmentally, but much more importantly, it provides the capability for us to export to the world at large the ability to not only take care of their energy requirements but their environmental positions as well.

If we don't give them those technologies in a kind of a package form, they'll burn it in any way they can because they don't have other choices. So that's why we're trying to give a real shot in the arm to clean coal technology right now, not to preclude its evolution, but to ensure that it gets off to a very solid start here, because we believe in the long term it's going to be the hope of not only this country but the rest of the world as well.

Senator LIEBERMAN. So, do you see the exemptions that are given in return for the use of clean coal technology as part of a boost, basically for that technology and for the use of coal generally?

Mr. LAWSON. Yes, sir. I do.

Senator LIEBERMAN. Otherwise, it seems circular to me in the sense that if there are lower emissions, why give exemptions. Okay. Let me come to another part of your written statement. On page 6 you said, "There's no scientific basis in terms of environmental impact or benefits for a 10 million ton reduction goal."

Perhaps you or folks working with you have been monitoring the work of this committee over this session but I can tell you that we've had some very powerful testimony. I'm not a scientist. I'm not a doctor, but we've had some very powerful testimony from people who are doctors and who are public health experts about the bad effect on our health of acid rain. One said 50,000 premature deaths a year occur as a result of acid rain and another, over 100,000.

In light of those facts, how can you say that there's not an adequate scientific basis to make this judgment that it's worth this reduction?

Mr. LAWSON. I've heard and been a part of and listened to those kinds of things on both sides of the issue. That wasn't the thrust of that statement. It probably isn't worded quite properly. What we were trying to say, we don't know of any scientific basis for specifically 10 million tons by 2000, 8 million tons or 12 million tons. What we're trying to say here is, let's take a look at this with a consideration of all of the factors associated with this and try to make a very broad, long-term judgment which looks at the energy policies of the country, which looks at the economic aspects of the situation, which looks at our competitive capability around the world as well as the environmental situation and wrap them into one package that makes the most sense for the entire country.

Senator LIEBERMAN. Okay. I understand. So you would say at this point that you accept the notion and I believe you said it in your statement, that there has to be some reduction.

Mr. LAWSON. Yes, sir.

Senator LIEBERMAN. And that there are some negative health effects from acid rain.

Mr. LAWSON. I'm not aware of negative health effects, quite candidly, Senator. I am aware of the studies that are about to start to evolve out of the NAPAP program and we look forward to seeing those and hope that they will be cranked into the legislation as they're created.

Senator LIEBERMAN. I think what I'd like to do is send you a copy of the testimony we've heard from one gentleman who was the past president of the American Public Health Association and invite your reaction to it.

Mr. LAWSON. All right, sir. I'll be happy to provide that to you.

Senator LIEBERMAN. Mr. Hawkins, last week EPA Administrator Bill Reilly testified that NO_x controls beyond those in the Administration bill in his opinion would not be cost effective. How do you respond to that?

Mr. HAWKINS. Well, the Administration's assumptions about cost effectiveness are extremely sensitive to the calculated costs of the

emission reductions themselves and that sensitivity is of concern to us because we think there's reason to believe that they are overstating the costs of further NO_x reduction. We've seen the same pattern in the past with respect to sulfur oxide controls.

What we do know is that a highly industrialized, coal-dependent country like West Germany has implemented a broad NO_x program that is much more far-reaching than anything proposed in this country. They are doing it. They are doing it without any effects on their ability to generate electricity, without any effects on their ability to be an industrialized competitor with the United States and other industrialized countries internationally. It can be done. They're proving it can be done. They're doing it on old plants in congested urban locations and they're doing it on a broad scale.

So we think that these concerns about the ability to do additional NO_x reduction are disprove in the real world. We should look at the real world rather than these computerized estimates.

Senator LIEBERMAN. That's a very important comparison and I thank you for it. My time is up.

Senator BAUCUS. Thank you, Senator.

Senator Jeffords.

OPENING STATEMENT OF HON. JAMES M. JEFFORDS, U.S. SENATOR FROM THE STATE OF VERMONT

Senator JEFFORDS. Thank you, Mr. Chairman. I'd like my statement to be made a part of the record if that's all right.

[Senator Jeffords' statement follows:]

OPENING STATEMENT OF HON. JAMES M. JEFFORDS, U.S. SENATOR FROM THE STATE OF VERMONT

Thank you, Mr. Chairman, for scheduling this hearing today. We've spent a great deal of time over the last couple weeks hearing testimony on other aspects of the clean air debate, and these next three days should prove very useful in putting the acid rain issues into clearer perspective.

Mr. Chairman, Vermont soils receive heavy doses of wet and dry acidic depositions and yet have a relatively low buffering capacity to neutralize these pollutants. We've known it for years and yet have been continually frustrated by our inability to do anything about it. Our Attorney General recently failed to convince the U.S. Supreme Court that the Environmental Protection Agency has the authority and the responsibility to force those who send sulfur dioxide and nitrogen oxide our way to take steps to keep a little less from going up into the wind from those tall stacks.

Well, it seems that finally a majority of lawmakers from all parts of the country are prepared to support a bill to force substantial reductions in the pollutants responsible for acid rain. The cure will not be cheap, but neither is it all that expensive. Looking at the issue from our side of the fence, I've seen enough studies indicating that the benefits outweigh the costs. For the record, as so that no one is uncertain about my position, I will support the strongest possible provisions to achieve the largest possible reductions in the two primary precursors to acid rain—sulfur dioxide and nitrogen oxides.

But I'm not here to toss economics lightly aside. The bill for the acid rain cleanup will be substantial and it is important that we devise a fair method to keep the costs reasonable. The Administration's bill establishes a system of marketable "allowances" for the right to emit SO₂, and one of the major goals of this hearing is to establish a record of opinions as to how this system might operate in the marketplace.

Employment is an important issue to be considered in this debate. While the net effect of the pending legislation should result in about as many jobs being created as are lost, I think it's important that we keep in mind the regional effects on American workers. Witnesses lined-up for this hearing will have important insight on how they see this bill affecting jobs locally and may have suggestions to ensure that transitions occur as smoothly as possible.

The ultimate goal of the legislation is acid rain reduction. I support that goal as do a majority of Americans. We've staked out a mark of a 10 million ton reduction in SO_2 . For some that's too much, for others not enough, and many seem to think it's just about right. Keeping in mind the political and environmental realities. I intend to work to see that the 10 million ton reductions will truly be achieved in practice, that growth of sulfur emissions is capped at the final reduction amount, and that additional reductions are ordered where possible.

Keeping in mind the economics of the task, and the human reality of the means, it's time to pass a bill to reduce emissions of sulfur dioxide and nitrogen oxides to a level that gives our plants, waters and soils have a fair chance to thrive among us.

Senator JEFFORDS. Mr. Hawkins, I come from Vermont which has been the recipient of probably more than our share of acid rain and one of the areas most detrimentally affected. We naturally are very interested in the clean air bill and in doing something about that situation.

One of the areas that does give me some concern is that the bulk of our emissions apparently come from the Midwest and whether you feel that the marketable emission permits will achieve actual reductions in our area or some say that it may not, that they may be shifted around such that we don't really get the benefits.

I wonder if you have an opinion on how that permission system will work and what the end result is that you project.

Mr. HAWKINS. That's an excellent question, Senator Jeffords, and I think it points up something important about these market-oriented systems and that is, you can never afford to embrace a market-oriented concept in the abstract. You have to look at the specifics of the context in which the proposal is going to operate because in some circumstances, the market-oriented approaches simply will not produce the desired results.

In this context, we think that the relationship between cost effective emission reduction opportunities is such that you can predict with a high degree of certainty that a market-oriented approach will produce the emission reductions in the areas that we need to produce them in order to maximize environmental benefits and that is really a product of history. The coal fired power plants that are located in the Midwest and that have enjoyed the use of high sulfur coal are large. They're relatively young. They're quite efficient. They're burning high sulfur coal and therefore, they're economically attractive candidates to accomplish large reductions at. It is unlikely that the market would steer the reductions to locations in the country far distant from these areas because of the fact that reductions in those other areas would tend to be more expensive per ton of pollution reduced.

So we are in fact fairly comfortable that this market-oriented approach as it is structured in the Administration bill and in the proposed Mitchell-Baucus bill would in fact provide a high degree of assurance that Vermont and the other highly affected New England, Northeastern States would receive the environmental benefits that they would under other types of approaches.

Senator JEFFORDS. That's encouraging. Maybe you can enlighten me just a little bit as to how this would work. Take the far West where the situation is not as dramatic, the market would not dictate that the Midwest not purchase the credits from the West that perhaps doesn't have as difficult a time meeting their standards.

Mr. HAWKINS. Well, in the western United States, most of the coal plants there burn lower sulfur content coal which means that if you put a scrubber on one of those plants, the tons that you would produce would be less than if you put the same piece of equipment on a plant in the midwestern United States. So in terms of the allowances that would be generated by purchasing a capital piece of equipment like that, a utility could generate a greater number of allowances by controlling a high sulfur feedstock, if you will.

Your question regarding the West though points up an area where we think the allowance and the cap will not work to protect the environment by itself and that is in the Western area and with respect to new plants. We think new sources of pollution in the western United States might be tempted if they were permitted to do so to purchase allowances from the eastern United States and build dirtier plants in the West.

That would not provide a compensation for the environmental harm that would be caused in the West. As I've said in my prepared statement, the pristine air quality in the West is a global treasure. It is something that literally no other industrialized nation has any more, good air quality of the kind that we have in the western United States. You cannot compensate for the damage to that air quality that would be caused by building a dirty plant in the West simply by getting emission reductions hundreds of miles away in another region of the country.

So as I said at the outset of my long answer, which I apologize for, you really have to look at each of these examples of how the market system would work in the specific situation.

Senator JEFFORDS. Thank you. Thank you, Mr. Chairman.

Senator BAUCUS. Mr. Hawkins, under the bill to be introduced by Senator Mitchell and myself, we target 20 plants for first phase without any mandated scrubbing. The question then becomes, at least in your opinion, would all of those 20 plants to achieve their reductions scrub or would some switch to low sulfur coal? What's your expectation?

Mr. HAWKINS. Senator, it's very much an expectation and my expectation would be that a large fraction of that capacity is extremely attractive from an economic standpoint to scrub. The plants tend to be high sulfur plants burning quite high sulfur coal content. They tend to be young. They tend to be large and among the universe of utility plants, those plants would be attractive candidates. In addition, the allowance system can create an incentive to provide additional control beyond the amount required to meet the Phase 1 targets because that can be a way of providing a financing mechanism for the installation of controls.

Senator BAUCUS. The President's bill mandates scrubbing.

Mr. HAWKINS. The President's bill does not mandate scrubbing.

Senator BAUCUS. Excuse me. That's right. We intentionally in this bill do not mandate scrubbing with the expectation based on the theory that that should be left up to the utilities, that utilities themselves should make that decision as to whether to scrub or to switch without some heavy-handed intrusion into marketplace decisions.

Mr. HAWKINS. That's right.

Senator BAUCUS. Is it your view that none of those 20 would utilize low sulfur coal?

Mr. HAWKINS. No, I would not say that. I think that some appreciable fraction would probably use low sulfur coal. What you will get and what the bill permits is the least cost decision by each of the utility operating companies.

Senator BAUCUS. Right.

Mr. HAWKINS. Just based on my knowledge of the age and size and the current sulfur coal burned by those plants, I would predict that more of the capacity on that list would go to technical controls than would switch but some of it would go to switching, I think.

Senator BAUCUS. Mr. Storey, do you have a view on that point?

Mr. STOREY. Senator, I do not disagree with David's view. I think that some of those plants indeed will switch and that's the reason to keep it as an economic cost control, the reason that we have recommended to you that those utilities or those plants be able to trade within the utility system and also encourage you to let Phase II plants opt in to the first phase and if you allow those things to happen, I think that a number of those plants will use low sulfur coal or low sulfur fuels and certainly some of them indeed will scrub.

Senator BAUCUS. If, as you stated earlier, plants that are permitted be allowed to operate at their permitted rate, some might respond by saying that will increase the emissions. What's your response to that?

Mr. STOREY. My response to that, Senator, is that's exactly right. You're going to have a plant somewhere, maybe—it was your great State of Montana that was using an extremely low sulfur coal operating below the permitted level. If the sulfur content of the coal was no longer available, they'd mined out that section and now had a little higher sulfur coal, that plant should not be penalized. It should be allowed at least to operate up to its permitted level and obviously I couldn't answer your question any other way except to say there would be some small increase in emissions but nothing that was not anticipated when that plant was permitted.

Senator BAUCUS. The bill we're about to introduce would provide that those plants that achieved reductions by over 50 percent through scrubbing are not required to further reduce. Would that help?

Mr. STOREY. Well, your bill as I understand it Senator, does have an exemption in it, a clean plant exemption, and certainly that should help if I read the language correctly because if a State had 50 percent of its plants scrubbed at 70 percent of removal or if it emitted less than 150,000 tons, then it would be exempt from any action and I assume that would indeed solve that problem, if you had a plant within the State that had that problem.

Senator BAUCUS. Would repeal of percentage reduction help, give impetus to clean coal technologies in your view?

Mr. STOREY. Again, if I read or if I understand your language and I'm putting in a lot of caveats because obviously we haven't seen the final and I don't want to dwell on that but let me just say that if I understand the language that you've put in your bill, you have asked or you are demanding, I guess, mandating, that they use the best available control technology and I guess as we see new

clean coal technology develop over the years, we're going to see the BACT standards change. So we will see plants today that will use maybe a wet scrubber and then plants 10 years from now, 5 years from now may indeed use some other type of combustion technology.

So that's the answer to that question.

Senator BAUCUS. It's my expectation that it will help.

Mr. STOREY. It certainly would, Senator, and I would be really remiss if I didn't tell you that we have worked against the percent reduction for a number of years and we certainly agree with you that it should be eliminated. It should be a standard, a new standard which you have set as, use the best available control technology.

Senator BAUCUS. It wouldn't be limited to the 78 percent reduction. It would open it up to even 50 percent reduction technologies, as I intend the bill to be introduced.

Mr. STOREY. Right, sir.

Senator BAUCUS. Senator Lieberman.

Senator LIEBERMAN. Two questions, Mr. Chairman. Mr. Trumka, I gathered from your testimony that you prefer the Mitchell-Baucus bill to the Administration bill; is that correct?

Mr. TRUMKA. That's correct.

Senator LIEBERMAN. Do you support it or would you rather that neither one be adopted?

Mr. TRUMKA. Well, I think we're beyond the point where you can say that neither bill or nothing should be done to correct the problem of acid rain. We accept the fact that there is a problem and the problem must be corrected. We also advance the notion that you should not create a new problem, namely unemployment, by correcting an old problem which is SO₂. So, I guess we should say in response to the Chairman's question about why we think the Mitchell-Baucus bill's a step in the right direction, one, it eliminates the uncertainty that Mr. Hawkins told you about, the amount of fuel switching and thus the amount of dislocation, particularly in Phase 1. Two, we think it provides the framework to correct both problems, namely unemployment as well as acid rain.

We think that another component should be added which would be cost sharing. We also have some I think real fears about deterioration of the bill without a cap or repeal of SO₂ reductions. I think I'd have to disagree with the Chairman on that aspect of it.

Senator LIEBERMAN. Thank you. Mr. Hawkins, I want to invite you just to speculate for a minute or two on the brave new world that I think we're entering if we get into marketable permits for emissions. It would be a new practice and I know that you've given it some thinking. For instance, will the utilities have an actual property right in the permits? Do you worry that they may hoard the permits? What if we decide to after a period of time with this system reduce the number of permits, will it require compensation of the utilities in some sense for what they possess and should we try to address any of these in the bills that we've got before us?

Mr. HAWKINS. Those are very important concerns, Senator, and yes, I think they should be addressed in the bills. As I mention in my prepared testimony, these allowances are not property nor should they be. Pollution is an undesirable activity. It's a byprod-

uct of not taking sufficient care to protect the environment and the health of our citizens. It's a nuisance in legal terms and it should not be accorded as a property right to anybody.

It is a temporary permission to continue an activity which is subject to Government regulation and that activity can be further restricted when the Government determines that it is appropriate to do so and that should be made very clear in the bill and it should be made very clear in the legislative history that that is what is contemplated by this system of allowances—temporary permission to continue an activity until the Government decides that further restrictions are warranted.

Senator LIEBERMAN. Thank you. Thank you, Mr. Chairman.

Senator BAUCUS. Thank you very much, Senator.

Just very quickly, Mr. Hawkins stated that the 20 plant focus in the first phase would tend toward greater certainty and better enforcement. I'm curious, Mr. Storey, Mr. Lawson, I'd like to hear your reactions to that.

Mr. LAWSON. I frankly have a little trouble with that stated concern about the enforcement. The utility industry and the coal industry are clearly within the confines of current legislation on clean air. We're meeting all of the requirements. It's kind of like a suggestion that we might not fulfill the commitments of whatever legislation.

Senator BAUCUS. What about the certainty side of it though. I mean there's been like certainty, more certainty anyway.

Mr. LAWSON. I think there is that aspect that it's computable. I like the line that was in Mr. Storey's testimony that polluters should pay and while we determine these 20 and that's a very precise understanding and we have the utilities selecting how they're going to accommodate that problem, the utilities of this country actually contribute 65 percent of the SO₂ that goes into the air. There's another 35 percent out there. There are a whole series of areas where people are contributing to the environment and I have some concerns that we are aiming specifically at a certain area without an opportunity to use the technology completely across the country and therefore get the real benefits on a nationwide basis.

So I just think that we need to understand when we go at those 20 if you do decide to go at those 20, what you're getting. Quite frankly, Senator, I still don't understand why we have Phase 1. If 10 million tons by the year 2000 is a great goal, then let's make that the goal and then let's use all of the flexibility and the economic capability of the country to make that goal and not worry about making this interim wicket which seems to be causing much more problems than the final goal.

Senator BAUCUS. Thank you very much. Thank you all very much for your helpful testimony.

The next panel includes Ben Yamagata, the Executive Director of the Clean Coal Technology Coalition, and Roy Alper, President of Independent Power Corporation, Jeff Smith, Executive Director of Industrial Gas Cleaning Institute and Mr. Don Peoples, President of the Montana Technology Companies. He's also the CEO of that company.

Let's go down the list. Mr. Yamagata, you're first on my list.

STATEMENT OF BEN YAMAGATA, EXECUTIVE DIRECTOR, CLEAN COAL TECHNOLOGY COALITION

Mr. YAMAGATA. Mr. Chairman, members of the subcommittee, I'm Ben Yamagata, Executive Director of the Clean Coal Technology Coalition which is an ad hoc group of more than 80 organizations organized specifically to advocate the development of clean coal technologies.

I'd like to summarize my written statement by focusing on four questions. First, what are clean coal technologies. Why are they important. Will pending acid rain proposals if enacted impede the development of these technologies and finally, can such acid rain proposals be amended to accommodate the commercialization of clean coal.

First, clean coal technology refers to a group of technologies that offer significant potential for improvement over current methods to generate energy or electricity from coal and to control or prevent emissions that result from using coal. They are utilized prior to the combustion of coal, during the combustion process or after combustion has occurred. Others convert coal to a liquid or gaseous fuel. These technologies are also referred to as retrofit or repowering technologies.

Retrofits can be used on existing plants to reduce emissions. In most cases, reductions are no greater than 50 to 70 percent sulfur removal but the reductions are achieved at significantly less cost than the conventional scrubber.

Repowering technologies replace a significant portion of the original plant and increase or repower capacity at the plant while also reducing emissions to levels which equal or exceed NSPS.

Second, as to why these technologies are important, let me note that many CCTs achieve simultaneous reduction of both SO_x and NO_x . Some clean coal technologies increase efficiency which in turn decreases emissions of carbon dioxide, a suspected greenhouse gas. Many attain required emissions control at lower capital and operating and maintenance costs and some are capable of utilizing a wide range of coals from low to high sulfur.

Furthermore, success in the development of these technologies may preserve American mining jobs, will ensure U.S. industrial competitiveness by keeping electric rates low and could expand the trade of American coal and technological know-how. In fact, the National Coal Council has estimated that clean coal technologies represent potentially a \$50 billion a year export market by the year 2000, climbing to \$70 billion by 2010.

Senator, to the extent the Clean Air Act legislation impacts the development of clean coal, the Coalition urges the committee to consider the importance of balancing national environmental policy and national energy policy which is dependent in large measure upon the continued and expanded use of coal. Nearly 57 percent of electricity generated in the U.S. comes from coal. We have recoverable coal reserves to last this century, the next century and a significant portion of the century thereafter.

Third, mandatory emission reductions could adversely impact the development of many clean coal technologies. These new technologies are not yet an available and accepted commercial option. The

Federal Government has underway a multibillion dollar program intended to accelerate development. The time required to achieve introduction and widespread use must be considered if Congress chooses to impose stricter emission requirements while also continuing policies and programs designed to encourage clean coal technologies.

Finally, let me briefly comment on provisions that must be included in any control program if clean coal technologies are to be encouraged. Briefly stated, we seek your consideration of the following.

Make all clean coal technologies, not just repowering technologies, eligible for extensions of time; if regulatory incentives are to be provided, then Congress should make such incentives available to any clean coal technology project undertaken; where an extension is provided for a repowering technology to be utilized on an existing plant, that same incentive should be provided for a clean coal technology installed at an entirely new facility, so long as the existing plant is retired and the reduction in emissions achievable at the existing plant is also achieved at the new clean coal facility; also, where a technology proves infeasible and the EPA and the industrial user both agree, some authority should be provided the Administrator to forebear in the application of earlier reduction requirements; and finally, given the developmental status of many clean coal technologies and the importance of these new methods to the future use of coal, the committee is urged to consider extending the clean coal extension to five years to ensure the widest opportunity for development and use of these technologies in meeting environmental requirements and energy needs.

That concludes my remarks, Mr. Chairman. On behalf of the Clean Coal Technology Coalition, I appreciate this opportunity to present our views on this very important legislation.

Senator LIEBERMAN. Thank you, Mr. Yamagata.

The bells have sounded for a vote in the Senate. Let's see if we can get one more witness in before I have to depart and we recess the hearing. Mr. Alper, you're next on my list.

STATEMENT OF ROY D. ALPER, PRESIDENT, INDEPENDENT POWER CORP.

Mr. ALPER. Thank you, Senator Lieberman. In the few minutes I have, I hope to offer a few ideas that you can find useful in achieving the objective which you have which I think will benefit all of us.

I've heard the same testimony that you have claiming that reducing air emissions from electric utilities will either significantly increase utility rates or create significant dislocation in the high sulfur coal industry or both. The reasons are clear, either scrubber retrofits or fuel switching. I'd like to offer you a somewhat different perspective on part of the problem because from our perspective there's a third arrow in the quiver of the utilities that few have discussed.

Of the roughly 100,000 megawatts of generating capacity that would be affected by S. 1490, for example, about 22,000 megawatts are aging. These units would in the normal course of events be con-

sidered for retirement in the 1990s as they reach the age of 40 to 45 years. Yet, nowhere in the debate on acid rain legislation have I seen any analysis on the contribution that could be made by retiring these units.

Instead, the cost of scrubber retrofits or fuel switching at these units is simply rolled into the estimated cost of clean up as if the plants are expected to have infinite lives. In fact, they have finite lives, just like the 1952 Buicks or DC-6s that were built in the same era as those power plants.

Focusing on the 16 States with power plants affected by the Administration's proposal, the aging units produce 26 percent of the problem SO_x emissions. In the five States with the greatest concentration of aging units that would not comply with the Administration's proposal, 38 percent of the targeted emissions come from aging units. Table 1 in my prepared testimony shows the top five States in terms of the concentration of aging units. They are New York, Ohio, Indiana, Tennessee and West Virginia, and four of those five, not including New York are among those, the top five States identified by the Edison Electric Institute as exposed to the most significant potential rate increases.

Even more specific is the list of six plants that is in table 2 of my testimony which are aging and alone. Just these six plants contribute about 11 percent of the SO_x emissions that would be effected by the proposed legislation. Clearly from our perspective, the retirement of these aging units and their replacement with cleaner and more efficient new technology offers a unique opportunity in this case to reduce air emissions while avoiding costly retrofits or fuel switching that is harmful to local economies.

These units need to be replaced soon anyway. Keeping them in the equation simply exaggerates the apparent cost of emissions reduction programs and serves no discernible interest. On the other hand, replacing the units with state of the art technologies can significantly reduce air emissions while reducing the cost and increasing the flexibility available to clean up the remaining units.

My company has completed an analysis of the advantages of the strategy in Southern California, an area that is struggling with NO_x rather than SO_x and we're now in the midst of studying the possibilities with the SO_x -affected utilities. Using conventional techniques and assumptions provided by State Government, we found that NO_x emissions could be reduced in Southern California by 65 percent by retiring 4,300 megawatts of aging units, replacing them with commercially available technologies and that there would be no net increase in rates to the rate payers.

The reasons that drove this were two fold. New technologies, the technologies of the late 1980s and 1990s are dramatically cleaner than these existing units—10-fold or more and they are dramatically more efficient and the efficiency we found covers the capital cost of the new units. A copy of that study is attached to my testimony for your information and I just want to make you aware that that was sponsored by a group of companies that are developing a wide range of technologies on an independent owned basis.

How does this relate to the proposed legislation and these are my final comments, Senator, among other things, I would urge caution in considering estimates of compliance costs. To the extent that

compliance costs at these aging units is being counted, that may be a cost that's unnecessary. I would also urge you to consider language in any bill that you adopt that does not inadvertently discourage the retirement of aging units, that would encourage the States to give serious consideration to an organized retirement and replacement program while at the same time giving them maximum flexibility to deal with the aging units.

Finally, I would urge you in any legislation to specifically acknowledge that retirement of the units and the replacement with new technologies is an acceptable control strategy. I've got specific recommendations attached to my testimony and I remain available, at your service, to help as you craft legislation. Thank you.

Senator LIEBERMAN. Thank you for your very interesting testimony and for your brevity. I'm now going to ask that the hearing stand in recess for a few moments. I'll be back right after voting. Thank you.

[Recess.]

Senator BAUCUS. The hearing will come back to order. I apologize to the witnesses for the break due to the vote. Apparently Mr. Yamagata and Mr. Alper have both testified; is that correct?

Mr. ALPER. Correct.

Senator BAUCUS. Okay.

Mr. Smith, you're next.

STATEMENT OF JEFF SMITH, EXECUTIVE DIRECTOR, INDUSTRIAL GAS CLEANING INSTITUTE

Mr. SMITH. Thank you and good afternoon, Mr. Chairman. For the record, I'm Jeff Smith, Executive Director of the Industrial Gas Cleaning Institute, the national non-profit association of manufacturers of air pollution control equipment. We appreciate the opportunity to be here today and congratulate the subcommittee on its efforts to resolve the long standing issue of controlling acid rain damage.

Our members are involved with a variety of competing air pollution control projects including clean coal technology, particulate controls that will often need to be upgraded when there is fuel switching as well as flue gas desulfurization systems, also known as scrubbers. It is therefore easy for us to be open minded and embrace a market-based solution to our Nation's SO₂ loading problems that would allow a utility to choose whatever SO₂ compliance method it desires.

My remarks this afternoon do focus on scrubbing technology, a technology, Mr. Chairman, that was developed largely through private funding unlike clean coal technology. Attached to my testimony are two fact sheets which discuss in detail all significant operating issues with respect to advanced scrubbing and high efficiency NO_x controls, and the bottom line is that advanced high technology pollution controls are available today to remove acid rain precursors efficiently, cost effectively and reliably.

In the short time I have now, I will address the issues of scrubber availability, effectiveness, cost and construction time.

The utility industry's own data confirmed by EPA studies show that plant operators can depend on scrubbers more than almost

any other piece of equipment in the entire boiler operation. Average availability often approaches 100 percent. This high reliability has been achieved by incorporating computer-assisted design and manufacture and many other scientific advances in chemicals and building materials.

Scrubber reliability has also benefitted from years of practical operating experience. At present, scrubbing systems operate at about 151 systems with over 65,000 megawatts of electric generating capacity or about 21 percent of our Nation's total coal-fired capacity. Therefore, scrubbers offer a factor of confidence to the utility industry.

Operating data also prove beyond question that scrubbers can remove more than 90 percent of SO_2 from the stacks of utilities. The use of recently developed additives can make this SO_2 removal efficiency even higher.

The cost of scrubbers has fallen dramatically and is still coming down. As EPA recently recognized in revised estimates, the actual retrofit cost of scrubbers will be far lower than those estimates previously presented to Congress. Among the reasons for lower cost is that the excellent reliability being achieved both here and abroad eliminates the need for a spare scrubber module.

Continuing technological advances as well as a highly competitive marketplace which offers numerous system types allowing a utility to select a system that fits its specific needs also add downward pressure on cost. Of course, all dollars spent on scrubbers will be recycled in the economy, creating thousands of new American jobs, many of which will be highly skilled. Use of scrubbers also preserves high sulfur coal markets and coal mining jobs. Together, these economic effects would partially offset acid rain reduction costs.

The costs of clean coal technology are largely unknown, resting as they do on a number of future R&D successes and adoption by a utility industry that has historically shown capital and risk aversion due to legitimate concerns about reliability.

Now the actual construction of a scrubber system can usually take place even in a retrofit situation without disrupting the power plant's operation. Actual tie in of the system takes on average about a month during which the facility will be down.

The regulatory structure of an acid rain bill should to be prudent leave about three years between the time an order for scrubbers is placed at the time of permit approval and the time that compliance must be demonstrated. Some retrofits will not take this long. During this time, design, procurement, construction and testing occurs.

Finally, I wish to note that a highly effective NO_x removal technology known as selective catalytic reduction is available, can remove up to 80 percent of NO_x emissions and is used in a growing number of countries and now in California to reduce NO_x emissions from utility boilers. This technology is explained further in one of the white papers attached to my testimony.

In conclusion, Mr. Chairman, let me respectfully suggest that in light of the demonstrated reliability and cost effectiveness of scrubbers capable of achieving immediate SO_2 reductions and the huge cost to public health and the environment attributed to acid rain

damage by numerous witnesses before this body over the years, the subcommittee could reasonably decide that it does not make sense to defer a significant amount of needed pollution reductions based on the speculative availability and cost effectiveness of clean coal technology sometime in the future.

Thank you again for this opportunity to appear and make IGCI's views known.

Senator BAUCUS. Thank you very much, Mr. Smith. Before I introduce the next witness, let me say something about Don Peoples from the City of Butte, for the benefit of those who may not know him. Don Peoples, until recently, was the chief executive of the City of Butte and also of Silver Bowl County. Montana has gone through some difficult economic times in the last several years. We're one of the sort of northern plains hinterland States, a bit different from Sun Belt and coastal States and various cities and the State of Montana have coped with this problem in various ways.

The one who has probably coped better than anyone else and who is probably known more than anyone else as Mr. Can Do is Don Peoples. The people of Butte, Montana are people who just don't bellyache and don't moan and complain about a problem. They just do something about it. They find solutions and if any one person who represents the solutions that the City of Butte has found, it's Don Peoples.

Don Peoples has now left the public sector. He's in the private sector and he's very, very highly respected not only in the City of Butte, Montana but the State of Montana because those in other parts of the State also looking to develop their city's economies are now looking more toward Butte to see how Butte did it but anyway, we're honored to have you Don, and look forward to your testimony.

**STATEMENT OF DONALD PEOPLES, CHIEF EXECUTIVE OFFICER
AND PRESIDENT, MONTANA TECHNOLOGY CO, INC., ACCOMPANIED BY JOEL MUEHLHAUSER, DIRECTOR OF ENERGY CONVERSION PROGRAM, UNIVERSITY OF TENNESSEE'S SPACE INSTITUTE**

Mr. PEOPLES. Thank you very much, Senator Baucus and thank you for those very kind words. I sincerely appreciate it. For the record, Senator and members of the staff of the committee, I'm Don Peoples and I'm the chief executive officer of Montana Technology Companies, Incorporated which is a Butte, Montana based firm.

We operate the largest test center in the West, the MHD Component Development Integration Facility. We operate that for the Department of Energy. Today I'm accompanied by my associate, Dr. Joel Muehlhauser, who is the director of energy conversion program from the University of Tennessee's Space Institute.

We thank you very much for the opportunity to express our views on the proposed clean air legislation and Senator, I want to personally congratulate you and extend the congratulations of the Montana Technology Companies for taking the initiative in this Clean Air Act. We applaud you for that and we're delighted to offer testimony here today.

Mr. Chairman, we are neither utility executives or coal operators. We are developers of technology that will provide the United States in the 20th century with the most technologically advanced, most efficient, most economical, and most environmentally sound engineering conversion system available any where. Now, I'm not equipped here today to discuss the technical aspects of the Mitchell-Baucus bill or the Administration bill. I do want however to limit my views to the impact of the legislation on clean coal technology and also the research and development programs of the Department of Energy.

I want to make particular statements as it does indeed relate to MHD. Many clean coal technology programs and Department of Energy research and development programs are now just entering the demonstration phase. Others are completing the research and development and are on the threshold of commercial development. Additional projects we feel are certainly candidates for future clean coal technology programs. The fact however is that few, if any, can achieve commercialization by 1995 and that of course causes us some problems.

Both the Mitchell-Baucus bill and the Administration bill call for loading limits in 1995 that will force industry to scrub and/or switch fuel. This we feel will result in a considerable waste of money that is invested in the clean coal technology bills and also the Department of Energy's research and development views. In our view, the 1.1 pound emission standard in the Mitchell-Baucus bill will force the 20 largest utilities to immediately adopt scrubbers. Scrubbing in our view is old technology. It's costly technology in that it represents one third of the cost of the powerplants and it creates a sludge that is a potential source of serious ground and water pollution. If utilities switch to oil, coal in general will suffer and western coal in particular will be even harder hit.

So we urge the subcommittee to take into consideration the available technology. Therefore, Senator, we offer the following options to you. First of all, extend the date of Phase I and Phase II by five years. This would allow completion of any of the clean coal technology programs and other Department of Energy research and development programs. Secondly, we suggest that the Clean Coal Technology Program be integrated with the Clean Air Act and that the Secretary of Energy would be allowed to determine when the clean coal technology is commercially available.

Now, let me address a little bit about MHD—important indeed it is that we allow this technology to seek its full development. As you know, Senator, MHD is the ultimate in Faraday electric power generating. The proof of concept that is now being worked on in Butte and in Tennessee is scheduled for completion in 1993. We feel that the MHD process, the retrofitting of the current plant or some other plant in the U.S. is certainly a clean coal technology candidate. We don't think that we're going to be ready for commercialization until the early part of the first decade of the next century. Obviously that would be too late for either Phase I or Phase II provisions.

MHD as we know, is a sound technology. The University of Tennessee has determined that the MHD process can remove 98 percent of sulfur dioxide. Nitrogen dioxides can be reduced to 0.1

pounds per million BTU and carbon dioxide can be reduced by as much as 38 percent. We all know the effect that CO₂ has on the greenhouse effect. So, I need not elaborate any further on that. It would also eliminate the need for scrubbers which we think is not in the best interest of the country and is not the most efficient or safe way to proceed.

Senator, in order for the U.S. to have access to this highly efficient and environmentally sound technology and by the way, to position the Nation to introduce a new technology to the international marketplace, we urged the subcommittee to adopt the recommendations. Again, Senator, I want to thank you for allowing Montana Technology Companies, Incorporated the opportunity to present this testimony.

Senator BAUCUS. Thank you very much, Don. What's your organization's view of the President's bill?

Mr. PEOPLES. Obviously Senator, we recognize a need for a clean air bill but we feel that the provisions in the Mitchell-Baucus bill, if amended, would be better suited to our situation in the West.

Senator BAUCUS. The bill, as it's been described to you, repeals percentage reduction and also would not require utilities that have scrubbed more than 50 percent to reduce, contrary to the Administration's bill, does that appear better or not than the President's bill.

Mr. PEOPLES. Obviously, Senator, the percentage reduction is a serious problem in the West and we feel that in Montana where we have expended a considerable amount of resources in the development of our coal-fired plants with modern technology, we certainly feel that the provisions that we understand in the Mitchell-Baucus bill are certainly much better suited to the Nation and to the West.

Senator BAUCUS. As you well know, some versions of some earlier bills mandated scrubbing, particularly the 20 highest emitters. The President's bill does not mandate scrubbing, has the 106 different plants that are to reduce in the first phase. It is my intention as well as the intention of Senator Mitchell in providing for 20 plants to not mandate scrubbing, that is, the thought is that the free market will be available and plants can try to achieve their reductions whatever way they saw fit, giving new clean coal technologies the opportunity to compete and develop their technologies and try to be part of the solution along with scrubbing—compete with scrubbing.

I'm curious about what your various reactions would be to that point of view, that philosophy.

Mr. PEOPLES. If I may, Senator, we certainly feel that the technology, if given various forms of technology that have been advanced through clean coal technology programs and through the Department of Energy's R&D programs, that given additional time that they can indeed be viable alternatives to scrubbing. That's why we suggest that Phase I and Phase II be extended for at least five years and that additionally that you would integrate the Clean Coal Technology Program with the Clean Air Act and that the Secretary of Energy would be allowed to determine when the Clean Coal Technology Programs were commercially available, allowing additional time for industry to—

Senator BAUCUS. You don't think that some of those 20 utilities will develop a solution that is different from a 100 percent scrubbing solution?

Mr. PEOPLES. Senator, it's my understanding that the University of Tennessee has done some work on that issue, on scrubbing and what alternatives might be chosen by industry. We would be happy to provide you with a copy of that study. I have not had an opportunity to review that study, but we would be happy to present that to you.

Senator BAUCUS. If you would because allowances—low sulfur coal substitutions—tend to be available to support scrubbing in Phase I if utilities—

Mr. PEOPLES. Our major concern is that the utilities which use scrubbing, if they choose scrubbing, then that is not going to allow the commercialization of facilities and processes such as MHD in the immediate future and we think that we need additional time to allow that.

Senator BAUCUS. Do you have any reaction to the allocation of clean coal technology funding? Some say that a disproportionate share has been allocated to areas in the Midwest, that perhaps development of competing technologies in other parts of the country have therefore been retarded. Do you have a view on that?

Mr. PEOPLES. I don't have a particular view on that at this time, Senator.

Senator BAUCUS. Senator Lieberman.

Senator LIEBERMAN. Thank you, Mr. Chairman. Mr. Alper, I was intrigued by your testimony, particularly the proposition that we might achieve some of our environmental goals by moving older powerplants from the system and replacing them and that by your studies, we could do so not only in a way that's environmentally better, cleaner, but also would not involve any rate shuck. I just want to ask you to develop that a bit more, to first, what would be the technology of those? What kinds of plants would those be?

Mr. ALPER. First of all, if I can describe the basis of our study in California very briefly, the replacement technologies were primarily California-oriented but included some 60 percent fluidized bed, solid fuel technologies which could include coal or petroleum coke which is a much dirtier fuel than any of the high sulfur coals that exist and gas fired co-generation using selective catalytic reduction for NO_x removal which Mr. Smith referred to. That is the control technology that is required on all gas-fired projects today in California.

I was present a few years ago when those new rules were imposed on projects coming down the pipeline, including one I was involved in. We screamed that we couldn't do it. It was going to raise the cost and it wasn't ready but it was imposed anyway. The projects are working. We were wrong and the regulators in that case were right. SCR is a proven technology and it reduces NO_x emissions by some 90 percent. We have about 3,500 megawatts of new operating power plants in California that are using that and the technology is spreading across the country very rapidly.

In the coal-based States where our study is not yet complete we are viewing the replacement technologies as currently commercially available fluidized bed technologies that would burn high sulfur

coal. You hear that that technology is not commercially available and I would agree with that so long as you qualify it by saying it's not available in what is called utility scale technology—150 megawatts and up. It is available and there are many power plants operating in this country and around the world at 100 megawatts and below using fluidized bed technology, burning exceptionally dirty fuels and burning them quite cleanly, meeting standards for example in California which are the toughest in the country.

The issue to me is not so much whether there are technologies available but whether it's available at utility scale. The companies that we work for are developing non-utility power projects at a smaller scale and will be happy to step forward to build the projects, raise the capital, assume the technology risk and assume the operating risk and look forward to the opportunity to do so with very clean plants that will burn high sulfur coal.

Senator LIEBERMAN. They're doing this now for non-utility uses?

Mr. ALPER. I should clarify myself.

Senator LIEBERMAN. Yes. Please.

Mr. ALPER. They are developing and building operating power plants that are independently owned and selling their power to the utilities. They're not utility owned power plants.

Senator LIEBERMAN. So in what you were describing, you were not considering for instance what we conventionally think of as some of the alternative fuel sources like solar or some of the photovoltaic cells.

Mr. ALPER. In our California study, we included a small increment of solar peaking technology which we have a significant amount of operating and under development. I would not suggest that for the rest of the country and we also included a significant component of geothermal, again, primarily a Western technology and not for the rest of the country.

Our study that we have underway for the coal based States would rely almost exclusively on fluidized bed technology with some addition of gas-fired technology with selective catalytic reduction.

Senator LIEBERMAN. Mr. Yamagata, did you want to add something?

Mr. YAMAGATA. Senator, I appreciate it. With respect to Mr. Alper's comments, I would just like to put it in a context, if I may. He made reference to both gas-fired cogeneration and let me emphasize, gas-fired cogeneration. He also made reference to fluidized-bed technologies which I would agree are commercially available at 150 megawatt range. To put that into context, separate and apart from the retirement of units that he spoke about in his testimony, I think it's very common and agreed upon knowledge that by 1987 to the year 2000, the country is really looking at trying to add new capacity or replace old capacity up to the order of magnitude of 200,000 megawatts of power and I would just submit that 150 megawatt units, in order to reach that kind of capacity loading, is going to be near impossible.

Mr. ALPER. If I may beg to differ. Many power plants—I would go so far as to say most power plants in this country are built with multiple units. Some of the largest new power plants in the country are using 5, 10, in some cases 12 separate units lined up in mul-

tiple order. You can build a 1,000 megawatt fluidized plant with ten 100 megawatt units or two 500 megawatt units. You still have 1,000 megawatts.

The question of economies of scale are often raised. I don't think the answer is in on that because we don't know what the economies are for large scale fluidized bed. It hasn't worked at a large scale. We do know it's working at the smaller scale and we do know they're competing in the marketplace.

Senator LIEBERMAN. I enjoyed your answers and I enjoyed the dialogue.

Senator BAUCUS. I would like to say to each of you, I know you're quite concerned about the time which it might take to develop various competing technologies, whether improvements on scrubbers or competing other technologies. I'm reminded of a phenomenon that's occurring here in the Senate. We're up to the gun here in the Senate. Something called Gramm-Rudman's, sequestration, reconciliation, all those big words. All it really means is that fairly quickly, that is by October 16th, we've got to make some decisions if we're going to get the budget deficit reduced and avoid the sequestration ax from falling.

It's human nature, I think, to not act until one's faced with a deadline and the fact is, we in the Congress, frankly have not been doing what we should be doing because the deadline isn't until October 16th but now that October 16th is approaching. The Finance Committee will be in late tonight and the Senate will be in late probably Thursday and Friday night, maybe into Saturday, Sunday, who knows. Then we have a conference report the following week which has to be adopted prior to October 16th.

My only point is that I think sometimes earlier deadlines help. You know that the deadline can't be too soon because then everything is chaos. Nothing happens. This is where art comes in as much as science, in trying to fit the right judgment—trying to decide the appropriate date which is just another way of saying I tend to think that dates should tend to be earlier rather than later as we should tend to err a little bit on the side of a little bit earlier rather than later and then if we have to make changes as we go down the road, we'll make changes. Congress will make the changes, that is, extend those deadlines if it becomes apparent that the deadlines are too tight and cannot be met.

Otherwise, I'm afraid that we tend to err on the side of inaction. Things just don't happen. Believe me, the Congress will be very, very responsive to your entreaties to extend some of these dates and let you, the industries, develop a little more time. We're very sensitive to that request and we'll exercise our very best judgment. We're always open to everything that's developing in the industries, trying to make that decision but I want you to know that we're very responsive to those requests but at the same time, I think we have responsibility to help make things happen at earlier onset dates that might be a little earlier rather than later.

I don't mean to prejudge the dates we're going to set in the introduced bill or the bill finally passed by the Senate and then ultimately in the conference report but I want you to know we're sensitive to those concerns.

Thank you very, very much for your participation this afternoon.
The hearing is adjourned.

[Whereupon, at 4:16 p.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

TIMOTHY E. WIRTH
COLORADO

United States Senate
WASHINGTON, DC 20510

COMMITTEE
ARMED SERVICES
BANKING
BUDGET
ENERGY AND
NATURAL RESOURCES

TESTIMONY OF THE HONORABLE TIMOTHY E. WIRTH
ON CONTROLLING ACID RAIN
BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OCTOBER 3, 1989

Mr. Chairman and Members of the Subcommittee, I thank you again for giving me an opportunity to address the need to strengthen the Clean Air Act. Today I am here to urge support action to control acid rain.

For years, the Congress has debated whether or not we should enact further controls on acid rain. Now, thanks to President Bush, and thanks to the work of Senator Mitchell in the last Congress, we are debating how to control acid rain. That is where I think we should be.

I want to commend this Subcommittee for laying out an excellent, thorough, and complete record over the past several years on the subject of acid rain, and I believe that record strongly supports the need for a strong program to reduce the emissions resulting in acid rain.

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I have been a strong proponent of controlling acid rain, and have voiced my concern for the effects of acid rain, not only on the east, but on the west. Colorado's mountain country contains many areas that are as vulnerable to ecological damage from acid rain as any in the east -- including some of our nation's premier national parks.

More recently, I have been re-examining the question of how we should achieve such controls. In the summer of 1988, Senator John Heinz and commissioned a study of innovative approaches to the solution of tough environmental problems, focusing on the creative use of economic incentives to cut the cost and increase the effectiveness of environmental regulation. We dubbed that study "Project 88", and we hoped that it would inspire the next Administration -- whether Democratic or Republican -- to go beyond "business as usual" and introduce innovative approaches to environmental regulation.

Mr. Chairman, I want to praise you and the President for adopting just this sort of innovative approach, by proposing the use of emissions trading in acid rain control. Using such a system was a key recommendation of Project 88, for two reasons.

First, because it gives us "more bang for the buck", it allows us to set up an ambitious program calling for 10 million tons of SO₂ reductions at far less cost than more traditional regulatory programs. A recent study by the Environmental Protection Agency

projects that emissions trading has the potential to cut control costs by as much as 50%.

Second, this system provides "freedom of choice". It doesn't mandate a particular technological solution. That means it allows the utility industry to utilize the full array of approaches to reducing acid rain emissions -- use of low-sulfur coal, co-firing with natural gas, dry sorbent injection, combinations of all these approaches, other new and innovative technologies; and, yes, scrubbers.

Many of these technologies may provide economic opportunities to Colorado and the rest of the west. Just as importantly, they allow a mix of approaches and a local freedom of choice which I believe is more likely to result in a wise balancing of costs and benefits -- including those linked to local employment -- than any uniform national mandate.

HOW TRADEABLE PERMITS WORK

Under conventional controls, the EPA would prescribe uniform treatment of every source of pollution -- for example, the adoption of "scrubbers" on every power plant, or the requirement that every powerplant meet the same standard for how much pollution it puts into the air.

Under a tradeable permit system, the EPA will require that the total amount of pollution will be reduced, but it will not require that every power plant use the same technology or meet the same emissions standard. Instead, each source will have the freedom to choose how it makes its contribution to the whole.

Overall, powerplants will be required to meet the overall target -- say, a 10 million ton reduction in SO_2 from present levels. Each powerplant will need a permit for its emissions, and there will only be enough permits for present levels of emissions minus ten million tons.

But we will not require equal reductions from every source. How, then, do all the powerplants divide this task? Through a marketplace in emission permits. By being able to buy permits from others who have some to spare, or being able to sell permits if they have reduced emissions lower than their permits require, we can set up a market which results in companies choosing the cheapest way to reduce 10 million tons.

Does that make a difference? Yes, it does. The cost of removing a ton of sulfur from one powerplant can be \$20 -- but for another plant it can cost \$600. Given that the cost of acid rain controls is a crucial consideration, doesn't it make sense to have a system which goes after the cheapest reductions first?

Mr. Chairman, I was very pleased that the President choose to take exactly this approach for his acid rain proposal. I was also pleased that the President choose an ambitious but realistic goal of reducing SO_2 by 10 million tons by the year 2000.

I am equally pleased, Mr. Chairman, with your adapting and improving on this concept in the bill you have drafted with Senator Mitchell. I am particularly excited about the repeal of the "percent reduction requirement" -- the requirement that western coal plants use scrubbers. This proposal recognizes that uniform national requirements are not needed to protect the environment, and gives the west the freedom to pursue other options. In combination with a cap on emissions, this can be both economically efficient and environmentally protective.

I am sure that many people will criticise the emissions cap, which is in both the President's and Senator Baucus's bills. I believe this provision deserves a chance to work. I think we should set out to see how well emissions trading can work, and I believe we will find that it works well enough to assure that when we in the west need new capacity, we will be able to get it. It will probably be well into the next century before this is tested, as the west currently has a lot of currently unused capacity powerplant capacity. I fully expect the Senate to follow the development of emissions trading carefully, and if we changes are needed to keep it working, we will have ample opportunity to

address that in the future. But I hope we give it a chance to work first.

In summary, Mr. Chairman, your bill, like the President's, maximizes environmental improvement without maximizing the cost. I believe that this is exactly what we should do. I urge the Members of the Subcommittee to move forward with this legislation, and I look forward to working with you on it.

* * *

STATEMENT OF SENATOR DAN COATS OF INDIANA
BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OCTOBER 3, 1989

Mr. Chairman, first I want to congratulate you and my other colleagues for holding this hearing today.

As a Member of the House Energy and Commerce Committee for the eight years preceding my appointment to the United States Senate, I served on both the Environment and Energy Subcommittees. I have been involved in legislation to control acid rain for those entire eight years.

In the past nine months, since taking office, I have travelled to every corner of Indiana. I have talked with business owners, environmentalists, utility employees, and folks who have just shown up at my town meetings and are not directly involved with this issue.

While I can tell you that the people of Indiana are willing to do their fair share to clean up sulfur dioxide emissions, I can also tell you that every part of Indiana will be affected by the legislation under consideration today.

From the Northwestern corner of Indiana, the home of the steel industry, which has worked so hard in recent years to be competitive in a world market, when many of their competitors are subsidized by foreign governments; to southern Indiana, where many small communities are dependent on the high sulfur Indiana coal mined which is there and sold to utilities throughout the region, Hoosiers will be affected by the legislation under consideration by this Subcommittee.

In fact, according to a recent study done by the Indiana Department of Environmental Management, Indiana utilities would experience an average 9.6% rate increase for Phases I and II of S. 1490. Indeed, the largest Indiana electric utility, Public Service Indiana, would, by these estimates, experience a 21% rate increase by the year 2000. Another, Indianapolis Power & Light, would experience an 11% rate increase for Phases I & II.

For this reason, I believe it is exceedingly important, and only fair, for the Subcommittee to seriously consider a proposal which includes some form of cost equity that would equalize the burden of meeting these new restrictions. When one region of the country, nine states in fact, which contributes only half of the problem, is asked to shoulder more than two-thirds of the burden, I believe it is incumbent on us, as legislators, to at least consider alternatives to the proposals before the Senate thus far.

In short, Mr. Chairman, if Indiana taxpayers can help foot a \$150 billion bill to bail out savings and loans in Texas, it seems only fair to me that Hoosiers should get some help from the rest of the country for a problem that is not of their making.

I will not take the time to go through the bills before us today on an item by item basis. But I would like to express concern about a few of provisions which, I believe, could be amended to achieve the same results without such a devastating impact on Indiana.

First, I am disturbed that both the Mitchell/Baucus and the Chaffee/Simpson bills only allow the clean coal technology extension for repowering technologies. By listing only a few technologies which are eligible for the extension, we preclude other technologies that may allow us to achieve the same goals in a more cost effective manner.

For instance, in Indiana we have a clean coal technology project underway which will allow two or more units to be hooked up to the same scrubber. The project of which I am speaking is located in Hammond, Indiana, and is sponsored by the Northern Indiana Public Service Company. It has been approved for clean coal funding under Round 2 of the Department of Energy's Clean Coal Technology Program.

In other words, the federal government has already approved this project for experimental purposes. But even if this project should prove enormously successful, similar operations will not be eligible for the three year extension under the legislation before us today.

It would be excluded from the three year extension because it is

Another provision in both bills which of concern to me, is the baseline used for figuring current emissions. As you know, Mr. Chairman, the Midwest experienced fluctuations in its economy during the 1980's. I believe, the formula which requires reductions to be based on an average of the utility's 1985-87 output could be needlessly harsh on Indiana companies.

For example, this particular three year period was especially difficult for the steel industry. The electric utility serving northwestern Indiana, had an artificially low output during these years, and I believe it would be unfair to base their reduction responsibilities on the 1985-87 time frame.

I know that there are a number of other formulas have been proposed which would adequately address this problem. Again, I am simply asking for fairness here. Since Indiana would be one of the hardest hit states in the country under this Title, I hope the Subcommittee will take into consideration Indiana's economic situation when drafting acid rain legislation.

Finally, I would like to take a moment to discuss jobs. At this time, about 4500 coal miners are employed in Indiana. The Indiana Department of Environmental Management estimates that enactment of S. 1490 would cost about 1120 miners their jobs. In direct and indirect economic consequences, this will amount to a loss of over \$110 million to 15 counties in Southern Indiana.

In conclusion, let me just reiterate that I am asking for fairness. Fairness to Hoosiers who have worked long and hard to make Indiana the kind of place where people want to live.

Hoosiers are willing to pay their fair share, Mr. Chairman, but it is not fair to impose a national problem on a few midwestern states.

Thank you for your time this morning.

SENATOR JOHN HEINS
TESTIMONY ON ACID RAIN BEFORE
THE SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

October 3, 1989

MR. CHAIRMAN, I AM TESTIFYING TODAY BECAUSE WE ARE ON THE BRINK OF FUNDAMENTAL CHANGES IN ENVIRONMENTAL POLICY. THE PRESIDENT HAS BROKEN A TEN YEAR LOG JAM OVER REAUTHORIZATION OF THE CLEAN AIR ACT. HE HAS DONE SO BY DEPARTING FROM CONVENTIONAL THINKING AND HARNESSING MARKET FORCES TO PROTECT THE ENVIRONMENT.

THE PRESIDENT'S LEGISLATION ALLOWS THE EMITTERS OF ACID RAIN PRECURSORS TO REDUCE EMISSIONS IN THE MOST EFFICIENT WAY POSSIBLE, ENHANCING COMPLIANCE AND REDUCING COST. HE DOES SO THROUGH A SYSTEM OF MARKETABLE PERMITS CALLED ALLOWANCES. THE PRESIDENT'S PROPOSAL MARKS THE FIRST TIME THAT AN EXPLICIT MARKET MECHANISM HAS BEEN APPLIED IN CLEAN AIR LEGISLATION. HE RECOGNIZED THAT IT WOULD TAKE A NEW APPROACH TO OVERCOME THE OPPOSITION GENERATED BY COSTLY SOLUTIONS TO ACID RAIN CONTROL.

IN ANNOUNCING HIS PROPOSAL, THE PRESIDENT CITED PROJECT 88 AS A BLUEPRINT FOR HIS PROGRAM. PROJECT 88 WAS A STUDY OF MARKET-BASED METHODS TO REDUCE POLLUTION. IT WAS COMMISSIONED EARLY IN 1988 BY SENATOR WIRTH AND I BECAUSE OF OUR CONCERN THAT WITHOUT NEW SOLUTIONS, OUR ENVIRONMENTAL PROBLEMS WOULD OVERWHELM US. FOR ACID RAIN WE RECOMMENDED A SYSTEM OF TRADEABLE PERMITS

IN ORDER TO CREATE A MARKET BASED INCENTIVE FOR POLLUTION REDUCTION.

AFTER THE REPORT'S RELEASE LAST FALL, I, ALONG WITH SENATOR WIRTH MET WITH MANY OF THE PRESIDENT'S ADVISORS, AND WE WERE DELIGHTED WHEN HE ADOPTED OUR ACID RAIN RECOMMENDATION AS HIS OWN.

THE ALLOWANCE PROGRAM GRANTS MARKETABLE PERMITS TO EMITTERS WHO OVER-CONTROL, THAT IS CUT SULFUR DIOXIDE EMISSIONS BENEATH THE REQUIRED EMISSIONS RATE. THESE CREDITS CAN BE APPLIED TO ANOTHER SOURCE WHICH CANNOT EFFICIENTLY REACH THE TARGET LEVEL, OR SOLD FOR THE SAME PURPOSE IN ANOTHER UTILITY. PERMITS ALSO HELP TO CAP EMISSIONS AND PROVIDE A VERIFIABLE MEANS OF ENSURING COMPLIANCE. NEW SOURCES OF EMISSIONS MUST OFFSET THEIR ACID RAIN PRECURSORS BY EITHER REDUCING EMISSIONS FROM ANOTHER SOURCE, OR PURCHASING MARKETABLE PERMITS. EPA WILL CAREFULLY TRACK THE FLOW OF PERMITS TO ENSURE THAT ALL UTILITIES ARE IN COMPLIANCE, MAKING ENFORCEMENT EASIER.

THERE WILL BE A SECONDARY MARKET FOR THE TRADEABLE PERMITS. ONCE ISSUED BY EPA TO UTILITY, IT MAY BE HELD OR SOLD ON THE MARKET AS SOUND BUSINESS PRACTICES DICTATE. THE PRICE OF THE PERMIT WILL BE UP TO THE PRIVATE SECTOR. ACCORDING TO ICF, THE EFFICIENCY OF THIS APPROACH WOULD SAVE BETWEEN \$1.7 BILLION AND \$3.4 BILLION A YEAR IN UTILITY COMPLIANCE COSTS BY THE YEAR 2010.

AND COSTS MUST BE A CONCERN. PENNSYLVANIA, FOR EXAMPLE, IS THE NATION'S FOURTH LARGEST COAL PRODUCER AND OVER 80 PERCENT OF OUR PRODUCTION COULD BE CLASSIFIED AS HIGH-SULFUR.

PENNSYLVANIA'S COAL FIELDS ARE BADLY DEPRESSED. 1987'S LEVEL OF PRODUCTION, 65 MILLION TONS, WAS THE LOWEST IN A CENTURY. IN 1977 THERE WERE 31,000 MINERS AT WORK IN PENNSYLVANIA. TODAY THERE ARE 17,000. FURTHER LOSSES IN COAL EMPLOYMENT WILL BE DEVASTATING TO PENNSYLVANIA'S ECONOMY, WHERE 45,000 WORKERS AND THEIR FAMILIES -- AND HUNDREDS OF COMMUNITIES -- REMAIN DIRECTLY DEPENDENT ON THE COAL INDUSTRY.

BUT PENNSYLVANIA'S ECONOMY NEED NOT AND SHOULD NOT GROW AT THE EXPENSE OF PENNSYLVANIA'S ECOLOGY. IN 1987 HUNTINGDON COUNTY IN THE CENTRAL PART OF THE STATE HAD THE DUBIOUS DISTINCTION OF RECEIVING THE MOST ACIDIC AVERAGE ANNUAL RAINFALL IN THE UNITED STATES WITH A PH LEVEL OF 4.08. HAWK MOUNTAIN SANCTUARY IN EASTERN PENNSYLVANIA AND ALLEGHENY NATIONAL FOREST IN WESTERN PENNSYLVANIA HAVE BOTH RECORDED RAINFALLS WITH A PH LEVEL OF 3.2. IN ELK COUNTY, IN THE NORTHWEST OF THE STATE, 91 PERCENT OF THE RIVERS AND STREAMS CAN ONLY BE STOCKED WITH BROOK TROUT -- WHICH IS LESS SENSITIVE TO ACIDITY -- AND ONLY DURING PRE-SEASON.

THE PENNSYLVANIA FISH COMMISSION ESTIMATES THAT STATE COLDWATER FISHERIES LOSE BETWEEN \$50 MILLION AND \$125 MILLION EVERY YEAR FROM ACID DEPOSITION. AND MR CHAIRMAN, AS ONE WHO

BELIEVES THAT HOURS SPENT FISHING ARE NOT DEDUCTED FROM ONE'S ALLOTTED TIME ON EARTH, THESE STATISTICS ARE A SERIOUS CONCERN.

MANY OF THE COAL MINERS IN MY STATE ARE ALSO SPORTSMEN WHO ENJOY THE OUTDOORS -- THEY ARE HUNTERS AND FISHERMEN AS WELL AS MINERS. THEY SHARE OUR STATE'S COMMON CONCERN FOR THE ENVIRONMENT. IN PENNSYLVANIA WE BELIEVE THAT CONGRESS MUST ENACT A NEW CLEAN AIR ACT AND I AGREE THAT 10 MILLION TONS OF SULFUR DIOXIDE REDUCTION BY THE YEAR 2000 IS THE RIGHT TARGET.

THE PRESIDENT'S PROPOSAL WOULD REACH THIS TARGET AND I COMMEND HIM FOR IT. WHILE I SUPPORT S. 1490 AND ITS OVERALL APPROACH, I MUST SAY THAT I AM CONCERNED BY THE DISPROPORTIONATELY LARGE AND UNREASONABLY HARSH IMPACT IT WILL HAVE ON MY STATE. THE APPALACHIAN REGION, ACCORDING TO ICF, WOULD LOSE OVER A THIRD OF ITS MINING JOBS UNDER THE PRESIDENT'S PLAN. PENNSYLVANIA WOULD LOSE 5,000 MINERS, MORE THAN ANY OTHER STATE.

WHEN I MET WITH THE PRESIDENT IN JUNE, I URGED HIM TO TAKE SEVERAL STEPS:

- USE MARKETABLE PERMITS TO REDUCE COSTS AND INCREASE EFFICIENCY;
- GIVE THE MARKETPLACE FOR THESE PERMITS TIME TO DEVELOP BY FIRST REDUCING EMISSIONS FROM

THE DIRTIEST SITES IN THE NATION -- THOSE WHICH ARE THE PRINCIPAL SOURCES OF SULFUR DIOXIDE;

- TAKE INTO THE ACCOUNT THE DISPROPORTIONATE COSTS WHICH ONE REGION MUST BEAR;
- REDUCE EMISSIONS BY 10 MILLION TONS FROM A 1980 BASELINE, THEREBY GIVING CREDIT TO THOSE STATES WHICH HAVE TAKEN STEPS TO REDUCE SO₂; AND
- PROVIDE AN EXTENSION OF THE SECOND PHASE FOR ALL CLEAN COAL TECHNOLOGIES, RETROFIT AND REPOWERING, AND NOT DISCRIMINATE IN FAVOR OF ONE OR THE OTHER.

IN SHORT, I URGED HIM TO APPLY A MECHANISM TO REDUCE THE COSTS WHICH ONE REGION OF THE COUNTRY WOULD BE ASKED TO SHOULDER; TO REDUCE UNEMPLOYMENT WITHOUT INCREASING COSTS.

SENATOR MITCHELL AND SENATOR BAUCUS HAVE PROPOSED LEGISLATION WHICH INCLUDES MANY OF THE THINGS I URGED THE PRESIDENT TO INCLUDE. I AM NOT HERE TO ENDORSE THEIR SUBSTITUTE, BUT I DO ASK THAT THE MEMBERS OF THE COMMITTEE CONTINUE TO WORK WITH THOSE OF US WHO REPRESENT THE AFFECTED REGION. WE ARE VERY, VERY CLOSE TO PASSING ACID RAIN LEGISLATION. THE APPALACHIAN

SENATORS WANT TO SUPPORT A CLEAN AIR BILL, AND WE FEEL
THAT IT IS WITHIN OUR GRASP TO MEET THE PRESIDENT'S GOAL WHILE
KEEPING COSTS REASONABLE AND UNEMPLOYMENT LOW.

THANK YOU, MR. CHAIRMAN.

STATEMENT OF

RICHARD L. TRUMKA

PRESIDENT

UNITED MINE WORKERS OF AMERICA

ON

ACID RAIN CONTROL LEGISLATION

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

U. S. SENATE

OCTOBER 3, 1989

MR. CHAIRMAN, I WOULD LIKE TO THANK YOU AND THE OTHER MEMBERS OF THE SUBCOMMITTEE FOR GIVING ME THE OPPORTUNITY TO PRESENT THE VIEWS OF THE UNITED MINE WORKERS OF AMERICA ON PROPOSED ACID RAIN LEGISLATION. THE FUTURE OF TENS OF THOUSANDS OF COAL MINERS AND THE WELFARE OF THEIR COMMUNITIES DEPENDS ON THE OUTCOME OF THE DEBATE OVER ACID RAIN. WE APPLAUD YOUR EFFORTS, MR. CHAIRMAN, TO SEEK A COMPROMISE THAT BALANCES LEGITIMATE DEMANDS FOR CLEANER AIR AND EMPLOYMENT. WHILE THE GOAL OF PROTECTING THE ECONOMIC BASE OF THE COAL FIELDS MAY GARNER LESS ATTENTION IN THE MEDIA, IT IS NO LESS IMPORTANT TO CONSIDER THAN THE DAMAGE TO THE ENVIRONMENT CAUSED BY ACID DEPOSITION.

FOR THE FIRST TIME IN A DECADE, BOTH THE PRESIDENT AND THE CONGRESS ARE FULLY ENGAGED IN THE EFFORT TO PASS CLEAN AIR LEGISLATION. THE QUESTION BEFORE THIS COMMITTEE IS NOT WHETHER TO REDUCE POWER PLANT EMISSIONS THAT CAUSE ACID RAIN, OR EVEN HOW MUCH OR BY WHEN. I THINK IT IS SAFE TO SAY THAT A CONSENSUS HAS DEVELOPED OVER THE NEED TO REDUCE SO_2 EMISSIONS BY 50 PERCENT, OR 10 MILLION TONS, OVER THE NEXT DECADE.

MOST CONTROL ADVOCATES, HOWEVER, CONTINUE TO IGNORE THE FACT THAT THE ADMINISTRATION'S BILL WILL ALSO RESULT IN MASSIVE, LONG-TERM UNEMPLOYMENT IN THE HIGH SULFUR COAL INDUSTRY AND ECONOMIC CATASTROPHE FOR COMMUNITIES THROUGHOUT NORTHERN APPALACHIA AND THE MIDWEST. CONGRESS HAS YET TO COME TO GRIPS

WITH THE QUESTION OF HOW TO ACHIEVE SIGNIFICANT AND LASTING REDUCTIONS OF SULFUR DIOXIDE EMISSIONS WHILE AT THE SAME TIME MINIMIZING THE IMPACT ON COAL STATE ECONOMIES.

THE FACT IS THAT THE ADMINISTRATION PROPOSAL, INTRODUCED BY SENATOR CHAFEE, CAUSES FAR MORE ECONOMIC DISRUPTION AND REGIONAL HARDSHIP THAN IS NECESSARY TO CLEAN UP OUR AIR. PERMANENT UNEMPLOYMENT FOR TENS OF THOUSANDS OF MINERS AND DOUBLE DIGIT ELECTRIC RATE INCREASES FOR MILLIONS OF CONSUMERS ARE NOT THE INEVITABLE RESULT OF TOUGH ACID RAIN CONTROLS. YET THESE WOULD SURELY FOLLOW FROM THE PASSAGE OF S. 1490. BILLS INTRODUCED IN THE HOUSE BY REPRESENTATIVES BOB WISE AND TERRY BRUCE ACHIEVE SIMILAR, IF NOT GREATER, REDUCTIONS OF SO₂, WITHOUT THE MASSIVE DISLOCATION CAUSED BY THE CHAFEE BILL.

MR. CHAIRMAN, THE EFFECT ILL-CONCEIVED ACID RAIN LEGISLATION WOULD HAVE ON OUR NATION'S MINERS AND THEIR COMMUNITIES MUST BE VIEWED IN THE CONTEXT OF AN INDUSTRY ALREADY RACKED BY MASSIVE UNEMPLOYMENT. IN 1979, APPROXIMATELY 250,000 COAL MINERS WERE AT WORK IN THE UNITED STATES. TODAY, COAL MINING EMPLOYS ABOUT 143,000 WORKERS, A DECLINE OF 43% IN THIS DECADE. THE OFFICIAL UNEMPLOYMENT RATE IN THE NATION'S COAL FIELDS IS MORE THAN TWICE THE NATIONAL AVERAGE, BUT EVEN THIS FIGURE DOES NOT REVEAL THE REAL DESPAIR IN COAL MINING COMMUNITIES. THOUSANDS OF MINERS WHO HAVE BEEN FORCED TO TAKE PART-TIME JOBS OR MINIMUM WAGE JOBS ARE NOT COUNTED IN THE OFFICIAL UNEMPLOYMENT RATE. OBVIOUSLY, THE PRECARIOUS STATE OF THE COAL INDUSTRY

REQUIRES THAT WE WEIGH CAREFULLY THE EFFECT OF ACID RAIN PROPOSALS ON COAL PRODUCTION AND EMPLOYMENT.

OVER THE PAST DECADE, CONGRESS HAS CONSIDERED NUMEROUS ACID RAIN PROPOSALS. MOST OF THEM, INCLUDING S. 1490, START WITH THE PREMISE THAT SO_2 EMISSION LIMITS SHOULD BE MANDATED, BUT THAT THE CHOICE OF COMPLIANCE METHODS SHOULD BE LEFT TO THE STATES AND UTILITIES. NO ONE CAN PREDICT WITH ABSOLUTE CERTAINTY THE EXTENT TO WHICH UTILITIES WOULD RETROFIT UNITS WITH SCRUBBERS, RETIRE OLDER UNITS, OR SWITCH FROM HIGH SULFUR TO LOW SULFUR COAL--OR NATURAL GAS. HOWEVER, IT IS POSSIBLE TO ESTIMATE THE COST OF EACH OPTION AND, ASSUMING THE UTILITY CHOOSES THE LEAST EXPENSIVE OPTION, TO PREDICT PROBABLE COMPLIANCE METHODS.

OUR PRELIMINARY ANALYSIS OF S. 1490 INDICATES THAT COAL PRODUCTION DISPLACEMENT WOULD EXCEED 110 MILLION TONS ANNUALLY. IN 1988, OVER 211 MILLION TONS OF COAL WERE SHIPPED TO THE 107 PLANTS REQUIRED UNDER THE ADMINISTRATION'S PROPOSAL TO REDUCE THEIR ANNUAL EMISSIONS TO 2.5 LBS. SO_2 PER MMBTU BY 1995. OF THAT, OVER 174 MILLION TONS EXCEEDED THE 2.5 LBS. LIMIT. INITIAL ESTIMATES FROM ICF, INC., WHICH HAS PREPARED AN ANALYSIS OF THE ADMINISTRATION BILL FOR THE EPA, SHOWS TOTAL COAL DISPLACEMENT IN THE RANGE OF 100 MILLION TONS. A STUDY COMPLETED FOR THE EDISON ELECTRIC INSTITUTE PREDICTS THAT ANNUAL COAL DISPLACEMENT COULD TOTAL 149 MILLION TONS.

USING AVERAGE PRODUCTIVITY FIGURES FOR HIGH SULFUR COAL PRODUCING REGIONS, OUR ANALYSIS INDICATES THAT THE CHAFEE BILL COULD CAUSE JOB LOSSES IN THE MINING INDUSTRY BETWEEN 22,000 and 30,000 BY THE YEAR 2000. THE ADMINISTRATION'S OWN STATEMENTS CONCEDE THAT OVERALL JOB LOSSES UNDER S. 1490 COULD BE DOUBLE OR EVEN TRIPLE THAT AMOUNT.

WHILE MUCH OF THIS UNEMPLOYMENT WOULD CENTER IN THE HIGH SULFUR COAL FIELDS OF NORTHERN APPALACHIA AND THE MIDWEST, SOME DISPLACEMENT WOULD ALSO OCCUR IN CENTRAL AND SOUTHERN APPALACHIA. REGARDLESS OF WHERE THE COAL MARKET MIGHT MOVE, THOSE MINERS WOULD BE UNEMPLOYED. THEIR ECONOMIC SUFFERING WOULD BE SEVERE BECAUSE OTHER JOBS IN THOSE AREAS ARE SCARCE AND ALMOST NEVER PAY THE SAME WAGES AND BENEFITS AS COAL MINING. EVEN WITHOUT ACID RAIN CONTROLS, MANY OF THESE AREAS HAVE DEPRESSED ECONOMIES THAT FACE A LONG TERM STRUCTURAL DECLINE IN EMPLOYMENT OPPORTUNITIES. THUS, MUCH OF THE UNEMPLOYMENT AMONG COAL MINERS WOULD OCCUR IN AREAS WHERE PROSPECTS FOR ALTERNATIVE EMPLOYMENT ARE BLEAK.

THE ECONOMIC COST TO THE MINERS' FAMILIES WOULD BE STAGGERING. UNDER S. 1490, OVER ONE BILLION DOLLARS IN DIRECT INCOME WOULD BE LOST BY COAL MINERS, AND COAL FIELD ECONOMIES WOULD BE HIT BY AN ADDITIONAL LOSS OF OVER \$2.5 BILLION FROM INDUSTRIES THAT NOW PROVIDE SUPPORT SERVICES AND RETAIL SALES TO THE LOCAL WORK FORCE.

PROPOSERS OF THIS APPROACH ASSERT THAT COAL STATE GOVERNORS WOULD TAKE ACTION TO PREVENT ECONOMIC DISRUPTION TO COAL MARKETS AND MINING JOBS. BUT THIS IGNORES THE REALITY THAT COAL STATE GOVERNORS WOULD BE SUBJECT TO CONFLICTING PRESSURES, NOT UNLIKE THE PRESSURES THAT HAVE DEADLOCKED CONGRESS FOR NEARLY A DECADE. COAL MINERS WOULD NOT BE ALONE IN VYING FOR THE ATTENTION OF COAL STATE GOVERNORS AND LEGISLATORS. UTILITIES WOULD USE THEIR CONSIDERABLE POLITICAL INFLUENCE TO SEEK COMPLIANCE STRATEGIES THAT REPRESENT THE LEAST COST TO THEM, AND COAL COMPANIES THAT PRODUCE PRIMARILY LOW SULFUR COAL WOULD URGE THE GOVERNOR TO PERMIT MAXIMUM FUEL SWITCHING WITH THE PREDATORY INTENT OF GAINING NEW MARKETS.

EVEN IF WE ASSUME THAT COAL STATE GOVERNORS WOULD WITHSTAND THESE CONSIDERABLE POLITICAL PRESSURES AND SUBMIT COMPLIANCE PLANS THAT SEEK TO PRESERVE EXISTING JOBS, THE ABILITY TO PROTECT THEIR CITIZENS IS LIMITED. SOME OF THE STATES WITH THE GREATEST POTENTIAL FOR EMPLOYMENT LOSSES CONSUME ONLY A SMALL PORTION OF THEIR OWN COAL PRODUCTION. WEST VIRGINIA, FOR EXAMPLE, BURNED 34 MILLION TONS OF STEAM COAL IN 1987, BUT PRODUCED OVER 136 MILLION TONS.

A GREAT DEAL OF UTILITY COAL IS CONSUMED IN STATES THAT HAVE NO COAL PRODUCTION CAPACITY. AS AN EXAMPLE, ABOUT 120 MILLION TONS OF COAL IS CONSUMED ANNUALLY IN GEORGIA, FLORIDA, NORTH CAROLINA, SOUTH CAROLINA, MINNESOTA, MICHIGAN AND WISCONSIN. WITH THE EXCEPTION OF A FEW SMALL MINES IN GEORGIA, NONE OF

THESE STATES PRODUCES COAL. COAL MINERS WHOSE JOBS ARE IN JEOPARDY WOULD HAVE LITTLE INFLUENCE OVER THE COMPLIANCE STRATEGIES DEVELOPED IN THOSE STATES. COAL STATE GOVERNORS, THEREFORE, WOULD BE UNABLE TO PROTECT LARGE PORTIONS OF THEIR COAL MINING EMPLOYMENT BASE, EVEN ASSUMING UNILATERAL AUTHORITY OVER UTILITY DECISIONS IN THEIR OWN STATES.

OBVIOUSLY, THE JOB LOSSES RESULTING FROM THIS APPROACH TO CONTROLLING ACID RAIN WOULD BE ACCOMPANIED BY SIGNIFICANT ELECTRICITY RATE INCREASES FOR RESIDENTIAL AND COMMERCIAL CUSTOMERS. MOST STUDIES INDICATE THAT IN THE ABSENCE OF FEDERAL SUBSIDIES AIMED AT REDUCING COMPLIANCE COSTS FOR AFFECTED UTILITIES, DOUBLE DIGIT RATE INCREASES WOULD NOT BE UNCOMMON IN THE NINE OR TEN STATES ASSIGNED THE LARGEST CLEAN-UP ROLE. HIGHER ELECTRICITY PRICES WOULD IN TURN FURTHER DAMPEN ECONOMIC GROWTH BECAUSE MARGINAL INDUSTRIES HEAVILY DEPENDENT ON ELECTRICITY WOULD BE FORCED TO RELOCATE TO STATES WITH LOWER OPERATING COSTS.

MR. CHAIRMAN, THE CONSEQUENCES I HAVE DESCRIBED ARE THE INEVITABLE RESULT OF ACID RAIN CONTROL STRATEGIES THAT ISOLATE THE REGION THAT PRODUCES AND BURNS MOST OF OUR HIGH SULFUR COAL. THESE BILLS TREAT ACID RAIN AS ESSENTIALLY A REGIONAL PROBLEM, DESPITE THE FACT THAT UNCONTROLLED SO₂ EMISSIONS HAVE BECOME A PROBLEM IN ALMOST EVERY REGION. DAMAGE FROM ACID DEPOSITION IS NOT CONFINED TO THE NORTHEAST, YET THE APPROACH OF S. 1490 IS TO ASSIGN TO THE MIDWEST AND A FEW NEIGHBORING

STATES A VASTLY DISPROPORTIONATE SHARE OF THE CLEANUP RESPONSIBILITY.

THE FACT IS THAT NINE STATES IN THE MIDWEST AND SOUTHEAST ARE BEING ASKED TO MAKE REDUCTIONS WELL ABOVE THEIR PROPORTIONAL CONTRIBUTION TO THE PROBLEM OF ACID RAIN. THESE STATES WERE RESPONSIBLE FOR A LITTLE OVER 50% OF TOTAL EMISSIONS OF SO_2 IN 1985, BUT UNDER S. 1490 THEY ARE CALLED UPON TO MAKE OVER 75 PERCENT OF THE REDUCTIONS.

MOREOVER, IN PHASE I OF THE PROGRAM, WHICH WILL IMPOSE THE MOST IMMEDIATE BURDEN ON ELECTRIC RATEPAYERS, THE NINE STATES RESPONSIBLE FOR JUST OVER HALF THE EMISSIONS ARE BEING ASKED BY THE CHAFEE BILL TO PAY FOR FULLY 90 PERCENT OF THE CLEANUP.

THE ARGUMENT FOR NATIONAL COST SHARING IS BASED ON SIMPLE MATHEMATICS AND THE OBVIOUS NEED FOR EQUITY IN THE FORMULATION OF ENVIRONMENTAL POLICY. WHILE IT MAY BE TRUE THAT CONTROLLING UTILITY EMISSIONS IS A MORE COST EFFECTIVE METHOD OF REDUCING ACID DEPOSITION THAN LIMITING SO_2 FROM ALL SOURCES, STATES IN THE MIDWEST AND SOUTHEAST SHOULD NOT BE REQUIRED TO BEAR THE COST OF CLEANING UP PORTIONS OF OTHER STATES' EMISSIONS AS WELL AS THEIR OWN PROPORTIONAL SHARE OF TOTAL U.S. EMISSIONS.

COST SHARING WILL NOT ONLY REMEDY THE FUNDAMENTAL INEQUITY IN ASSIGNING A DISPROPORTIONATE SHARE OF THE CLEANUP BURDEN TO A HANDFUL OF STATES. IT WILL ALSO AMELIORATE THE ECONOMIC

EFFECTS OF TOUGH SO₂ CONTROLS. THE UNITED MINE WORKERS OF AMERICA HAS LONG HELD THAT ACHIEVING SIGNIFICANT ENVIRONMENTAL PROGRESS WITHOUT REGIONAL ECONOMIC DISLOCATION DEPENDS ON A FEDERAL COMMITMENT TO PROMOTE THE USE OF CONTROL TECHNOLOGY BY THE LARGEST UTILITY EMITTERS OF SULFUR DIOXIDE.

THIS STRATEGY WAS REFLECTED IN THE AGREEMENT WE REACHED LAST YEAR WITH SENATOR GEORGE MITCHELL, ONE OF THE SENATE'S LEADING PROPONENTS OF ACID RAIN LEGISLATION. AS SENATOR MITCHELL TOLD THE SENATE, "A POLICY THAT IMPOSES HUGE JOB LOSSES IN WEST VIRGINIA OR OHIO OR KENTUCKY IS NO MORE ACCEPTABLE THAN A POLICY THAT IMPOSES HEAVY POLLUTION DAMAGE ON MAINE OR VERMONT OR NORTH CAROLINA." THE WIDESPREAD APPLICATION OF CONTROL TECHNOLOGY IS THE BASIS UPON WHICH SO₂ REDUCTIONS ARE ACHIEVED WITHOUT WIDESPREAD JOB LOSSES AND ECONOMIC HARDSHIP.

COST SHARING IS A CRITICAL ELEMENT IN THIS STRATEGY, PARTLY BECAUSE IT WILL PROTECT RATE PAYERS IN SERVICE AREAS WHERE TECHNOLOGY IS THE COMPLIANCE METHOD CHOSEN BY THE UTILITY. BUT COST SHARING ALSO MAKES TECHNOLOGY MORE ATTRACTIVE TO UTILITIES THAT WOULD OTHERWISE HAVE CHOSEN TO SWITCH FUELS.

WHETHER ENGINEERING CONTROLS ARE REQUIRED IN THE FIRST PHASE OF AN ACID RAIN PROGRAM, AS THE UMWA HAS PROPOSED, OR MERELY ENCOURAGED BY THE AVAILABILITY OF SUBSIDIES AND OTHER REGULATORY INCENTIVES, COST SHARING WILL GUARANTEE THAT SIGNIFICANT EARLY REDUCTIONS ARE ACHIEVED WITHOUT DISRUPTING

COAL MARKETS. IN THE LATER PHASE OF THE PROGRAM, COST SHARING WILL PROMOTE THE USE OF CLEAN COAL TECHNOLOGIES, WHICH WILL HELP ASSURE OUR LONG TERM ENERGY SECURITY.

DESPITE THE HYSTERICAL OPPOSITION COST SHARING HAS ENGENDERED, IT IS IMPORTANT TO NOTE THAT MOST COST SHARING PROPOSALS WOULD COST THE AVERAGE RATE PAYER BETWEEN 25 AND 75 CENTS A MONTH. PUBLIC OPINION POLLS CONFIRM THAT A MAJORITY OF AMERICANS WOULD AGREE TO PAY SLIGHTLY LARGER ELECTRIC BILLS TO REDUCE ACID RAIN. CERTAINLY, THEIR DECISION WOULD NOT BE ALTERED BY THE FACT THAT THEIR CONTRIBUTION WOULD PROTECT THE LIVELIHOOD OF AMERICANS WHO DEPEND ON HIGH SULFUR COAL PRODUCTION FOR THEIR ECONOMIC SURVIVAL.

A CAREFUL BALANCE OF TECHNOLOGICAL CONTROLS AND FLEXIBLE COMPLIANCE METHODS THAT ENHANCE THE DEVELOPMENT OF COAL PRODUCTION IN EVERY COAL PRODUCING REGION WILL DO MORE THAN PREVENT WIDESPREAD JOB LOSSES AND STEEP ELECTRICITY RATE INCREASES. IT WILL ALSO FURTHER ENHANCE THE PROSPECTS OF THE CLEAN COAL TECHNOLOGY PROGRAM, A \$5 BILLION INVESTMENT THAT WILL SECURE COAL'S ROLE IN AMERICA'S ENERGY FUTURE.

THE ADMINISTRATION'S PROPOSAL SERIOUSLY UNDERMINES THIS EFFORT BY TARGETING 107 PLANTS FOR EMISSION REDUCTIONS IN 1995, BEFORE THESE NEW TECHNOLOGIES WILL HAVE A CHANCE TO MATURE. BY FORCING THESE PLANTS TO MEET A 2.5 LBS. SO₂ EMISSION RATE IN 1995, S. 1490 EFFECTIVELY WOULD PRECLUDE THE USE OF CLEAN COAL

TECHNOLOGIES AT THESE PLANTS WITH HIGHER SULFUR COALS IN THE SECOND PHASE OF THE PROGRAM. BY THE YEAR 2000, MANY OF THE HIGHER SULFUR COAL MINES THAT HAD SUPPLIED THESE PLANTS WOULD HAVE SHUT DOWN, AS COAL OPERATORS SHIFTED THEIR RESOURCES IN RESPONSE TO THE 1995 EMISSION REDUCTION STANDARD. HUNDREDS OF SMALL COAL COMPANIES WOULD BE PUT OUT OF BUSINESS IN THE PROCESS.

THE ACID RAIN BILLS INTRODUCED BY REPRESENTATIVE WISE AND REPRESENTATIVE BRUCE AVOID DISRUPTIONS TO OUR NATION'S ENERGY MARKETS AND RELATED JOB DISLOCATIONS AND BUILD UPON OUR CURRENT COMMITMENT TO THE DEVELOPMENT OF CLEAN COAL TECHNOLOGIES. SECOND, THEY DISTRIBUTE BOTH EMISSION REDUCTIONS AND THEIR COSTS EQUITABLY AMONG REGIONS. FINALLY, THEY PROVIDE A SURE METHOD OF REDUCING SULFUR DIOXIDE IN AMOUNTS EQUAL TO OR GREATER THAN S. 1490.

H.R. 3211, INTRODUCED BY REPRESENTATIVE BOB WISE (D-W.VA.), IS BASED ON THE ACID RAIN CONTROL OPTION FAVORED BY EPA BUT REJECTED BY OMB AND PRESIDENT BUSH. UNDER H.R. 3211, THE TWENTY LARGEST EMITTERS OF SO_2 WOULD BE REQUIRED TO INSTALL POLLUTION CONTROL TECHNOLOGY BY 1995. COMBINED WITH REDUCTIONS AT OIL FIRED POWERPLANTS, PHASE I WOULD ACHIEVE A 5 MILLION TON REDUCTION IN SO_2 EMISSIONS WITH MINIMAL DISRUPTIONS IN COAL MARKETS. PHASE II, WHICH IS SIMILAR TO THE SECOND PHASE CONTROL STRATEGY IN S. 1490, LIMITS ALL COAL FIRED ELECTRIC UTILITY PLANTS TO AN EMISSION RATE OF 1.2 LBS., MEASURED ON A

30 DAY ROLLING AVERAGE BASIS. IT DIFFERS FROM S. 1490 IN THAT THE COST SHARING PLAN THAT SUBSIDIZES PHASE I MANDATORY CONTROLS WOULD ALSO BE AVAILABLE IN PHASE II TO PLANTS THAT INSTALL TECHNOLOGICAL CONTROLS.

TO PRESERVE THESE EMISSION REDUCTIONS, THE WISE BILL REQUIRES EPA TO ISSUE REVISED NEW SOURCE PERFORMANCE STANDARDS FOR LARGE FOSSIL-FUELED UTILITY BOILERS WITHIN ONE YEAR FOLLOWING ENACTMENT OF THE BILL. REVISION OF THE 1979 UTILITY NSPS IS ALREADY OVERDUE, AND MORE STRINGENT EMISSION STANDARDS FOR NEW PLANTS WILL HELP ENSURE THAT THE 10 MILLION TONS SO₂ REDUCTION REQUIRED BY THE BILL IS NOT ERODED AS A RESULT OF EMISSIONS FROM NEW PLANTS.

THIS IS A MORE SENSIBLE APPROACH TO MINIMIZING FUTURE EMISSIONS THAN THE MORE COSTLY "NEW SOURCE OFFSET" REQUIREMENT IN THE BUSH BILL, WHICH IS TANTAMOUNT TO A "NO GROWTH" POLICY FOR MANY STATES. IN FACT, THE EMISSION ALLOWANCE SCHEME IN S. 1490 WOULD CREATE A PERMANENT RIGHT TO POLLUTE FOR OWNERS OF EXISTING PLANTS, WHICH WILL SERVE TO DEFEAT THE NATURAL ATTRITION OF SO₂ EMISSIONS CAUSED BY THE RETIREMENT OF EXISTING PLANTS AND THEIR REPLACEMENT BY NEW, STATE-OF-THE-ART FACILITIES. WITH THE RETIREMENT OF OLDER PLANTS, THOSE HOLDING THESE ALLOWANCES MAY APPLY THEM TO THEIR REMAINING OLDER SOURCES, THEREBY INCREASING THEIR EMISSIONS. IN EFFECT, S. 1490 MAINTAINS A STATIC 10 MILLION TON REDUCTION OF SO₂, RATHER THAN FULFILLING THE PURPOSE OF THE NEW SOURCE

PERFORMANCE STANDARDS, WHICH IS TO CONTINUE THE DOWNWARD TREND OF SO₂ EMISSIONS.

THE WISE BILL ALSO PREVENTS EMISSIONS FROM INCREASING IN ENVIRONMENTALLY SENSITIVE WESTERN STATES, WHERE NATIONAL PARKS SUCH AS THE GRAND CANYON ARE EXPERIENCING VISIBILITY PROBLEMS DUE TO SO₂ EMISSIONS THAT RESEMBLE THE AIR AROUND LOS ANGELES AT RUSH HOUR.

THE BILL INTRODUCED BY REPRESENTATIVE TERRY BRUCE (H.R. 2909) DOES NOT TARGET THE LARGEST SO₂ EMITTERS FOR CONTROLS, BUT IT WOULD LEAD TO THE WIDESPREAD APPLICATION OF CONTROL TECHNOLOGY BECAUSE IT OFFERS SUBSIDIES ONLY TO STATES THAT ACHIEVE THEIR FIRST PHASE REDUCTION WITH ENGINEERING CONTROLS.

MR. CHAIRMAN, A SOUND ACID RAIN CONTROL PROGRAM MUST BALANCE LEGITIMATE DEMANDS FOR CLEANER AIR AND ECONOMIC SURVIVAL. SOUND PUBLIC POLICY SHOULD REFLECT THE DESIRE OF MOST AMERICANS TO AVOID CAUSING OR PROLONGING REGIONAL HARDSHIP. THIS WAS ILLUSTRATED MOST RECENTLY IN THE CONGRESSIONAL RESPONSE TO THE SAVINGS AND LOAN PROBLEM, WHERE BANK FAILURES IN A HANDFUL OF STATES WERE RECOGNIZED NOT AS A REGIONAL ECONOMIC CRISIS BUT AS A NATIONAL ONE THAT REQUIRED A NATIONAL SOLUTION.

CONGRESS HAS BEEN DEADLOCKED OVER ACID RAIN CONTROL LEGISLATION BECAUSE IT HAS FAILED TO ACKNOWLEDGE THAT IT IS A NATIONAL PROBLEM REQUIRING A NATIONAL SOLUTION. BY BALANCING

LEGITIMATE DEMANDS FOR CLEANER AIR AND ECONOMIC SURVIVAL, H.R. 3211 AND H.R. 2909 OFFER THE BEST CHANCE FOR BREAKING THE ACID RAIN STALEMATE IN A WAY THAT HELPS BOTH THE VICTIMS OF ACID DEPOSITION AND THE POTENTIAL VICTIMS OF ILL-CONCEIVED ACID RAIN CONTROLS.

TESTIMONY OF
DAVID G. HAWKINS
SENIOR ATTORNEY
NATURAL RESOURCES DEFENSE COUNCIL

ON BEHALF OF THE
NATIONAL CLEAN AIR COALITION

to the

SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

on

PENDING ACID RAIN CONTROL LEGISLATION

TUESDAY, OCTOBER 3, 1989

Mr. Chairman, Members of the Subcommittee. My name is David G. Hawkins. I am senior attorney for the Natural Resources Defense Council. I am appearing today on behalf of the National Clean Air Coalition, its three dozen member organizations, and the millions of Americans the Coalition represents.

The Coalition is now in its 16th year. For most of those years, we have been calling for national legislation to respond to the scourge of acid rain.

Today's hearing is the latest, and we hope, one of the last, careful reviews of the range of proposed responses to the acid rain problem.

The unfinished agenda is a long one. Questions of tonnage and timing, technology, cost and equity will all be thoroughly explored and the alternatives debated.

But it is heartening to note that we were not invited here today to debate whether we need acid rain control. There is,

finally, a consensus that the time has come to act. Consensus is tantalizingly close on a number of the issues of substance that still divide the various interests affected by acid rain legislation. The road ahead looks much shorter than the road behind.

We may share a sense of relief at this new spirit. But this relief should be tinged with sadness that the consensus has taken so long to develop. Since 1981, the human and natural environment have absorbed the insult of more than one-quarter of a billion tons of acid rain pollutants.

If we had begun the cleanup in 1981, and moved as quickly and aggressively as possible using available cleanup methods, we could be here today congratulating ourselves on a job well done. We could have cut acid rain pollution by nearly half already. We would have created hundreds of thousands of jobs in the engineering, construction and chemical industries. And we would have paid the cost in 1981 dollars.

Sadly, we did not act in 1981, nor in the intervening years. Since 1981, the Coalition and members of this Committee have proposed a variety of solutions to the acid rain crisis and supported many proposals advanced by others. All have come to nothing, caught in a whirlpool of regional divisiveness and economic conflict.

We have always argued, Mr. Chairman, that these conflicts were more imagined than real.

* We have always argued that the questions of cost, economic advantage and equity could be answered if all the parties approached the negotiations in an atmosphere of mutual trust and good faith.

For our part, we have always been willing to support the product of those negotiations, as long as the fundamental goal of acid rain control was not lost in the process. But, over the years, too many interests sought, not action, but delay.

Too few approached the acid rain problem from the point of view of the victims of acid rain. Let me say a word about the victims.

Thousands of lakes and streams dead, dying or threatened by acid rain; recreational resources -- and recreation industry jobs -- lost; the urban infrastructure, historical artifacts and drinking water supplies, all damaged; forests and crops damaged -- and livelihoods threatened. In every case, acid rain is the culprit or prime suspect.

Questions of tonnage, timing and cost, policies to minimize the economic and social consequences of acid rain control -- Congress must do the best job possible of answering all these questions. But these issues are only one side of the equation. On the other side are the needs of the human and natural environment.

There are economic and social consequences associated with the lack of control, and the evidence suggests those costs are greater than the cost of control. There are jobs lost and profits

lost, every day, as a result of today's acid rain. There are health risks caused by exposure to acid rain precursor pollutants.

For all these reasons, the Coalition's emphasis is on the goal -- large reductions in acid rain pollution on an accelerated timetable -- for the sake of our natural resources, our environment, our own health and welfare. I urge that perspective on the Committee today.

Let me address the major acid rain issues in turn, with special attention to the Bush Administration's proposal as embodied in S. 1490, and with the draft Baucus-Mitchell bill.

Tonnage Reduction

Both sulfur and nitrogen oxides must be reduced to stop acid rain. The National Clean Air Coalition's position on size of the reduction remains the same, and is based on the conclusion of the National Academy of Sciences. We regard a 50 percent reduction in acid rain precursors as the appropriate ultimate reduction requirement.

None of the pending proposals would achieve so deep a reduction. We have supported proposals that achieve less, as acceptable interim measures. We believe scientists ultimately will confirm our view that greater reductions are necessary.

The proposed Mitchell-Baucus bill improves the Administration's bill in a number of important respects:

- o first, Mitchell-Baucus contains a true NOx reduction requirement from today's levels;

- o second, phase one of Mitchell-Baucus focusses on a smaller number of plants, increasing certainty and enforceability at the start of the program;
- o third, while Mitchell-Baucus provides compliance extensions for repowering projects, it rejects broad and unnecessary exemptions of so-called clean coal technology from performance standards and other air quality regulations.

The "clean coal" exemptions in the Administration bill are extremely broad. They would permit a new large coal-fired generator to be built completely exempt from federal New Source Performance Standards. They would permit wholesale exemptions from the Act's Visibility, Prevention of Significant Deterioration, and Nonattainment review programs for projects that would significantly increase actual emissions above today's levels. (The bill contains a "no increase in potential to emit" test that allows large increases in actual emissions to occur.) The Administration bill also unnecessarily grants repowered sources additional emissions allowances, even though the candidate repowering technologies all are designed to emit at very low rates. This Committee should ask the Administration why it is appropriate to exempt technologies that are promoted as "clean" from existing legal requirements that they in fact be clean.

We have criticized the Administration bill for taking credit for one million tons of industrial SO₂ emission reductions yet relying only on computer predictions rather than legal requirements to achieve such reductions. We urge the Mitchell-Baucus bill

include requirements directing EPA to establish legally enforceable allowances for total industrial SO₂ emissions at a level assumed in the President's bill -- one million tons below 1980 levels.

Emissions Trading and the Cap

Both bills establish permit, trading and enforcement systems designed to give the nation's utilities both maximum flexibility and a positive economic stake in achieving the required acid rain reductions. The trading and allowance systems in both bills need careful review and analysis to assure that the systems can work in the real world, and that the environment is the ultimate beneficiary.

There is much loose talk that the allowance system establishes pollution "rights." That is not correct. There are no "rights" to pollute, nor should there be. Pollution is an undesirable byproduct of activities that were not designed with enough respect for the needs of the human and natural environment. In legal terms pollution is a nuisance. Its presence is tolerated as a temporary expedient as we struggle to find nondisruptive ways to reduce further the burdens we dump into the air, the water, the land.

The Bush Administration bill correctly states that pollution allowances represent temporary permission to emit SO₂; permission that can be further restricted by regulation in the future. It is imperative to specify allowances in these terms to avoid giving polluters a new legal weapon to use against further pollution control efforts.

The market incentive and emission allowance system is an approach long advocated by industry and academic analysts as a means to achieve a stated environmental objective with maximum flexibility and minimum compliance costs. Industry has said, "tell us the level of environmental protection you want and give us the ability to choose the most efficient means to reach that level."

Both the Administration and Mitchell-Baucus have been designed to allow industry the flexibility it has requested. The environmental objective is clear -- reduce national SO₂ emissions to a level 10 million tons below 1980 levels and hold them at that level -- and the means are flexible and market oriented.

The keystone of the environmental objective and, thus, of the allowance system itself is the requirement that once total SO₂ emissions are reduced that they not be increased again. This provision, dubbed the cap, is of central importance. Like an arch without a keystone, the reduction program and the allowance system without a cap could not bear its own weight and would collapse. Without a cap there is no clear environmental objective, only a temporary reduction in damage followed by a steady return of that damage.

It is particularly bad form for the very industries that have called for a structure of solid environmental objectives and flexible means to argue now for a weakening or elimination of the cap. It is the cap that delivers the environmental goal.

In addition, without a cap there is no true market for

allowances. Rather there is a phony market where new plants are allowed to put thousands of tons of pollution back into the air even as utility customers are paying for existing plants to take tons out of the air.

The cap contributes to lower, not higher, utility industry costs. The cap encourages utilities to explore and invest in additional energy efficiency -- an option that costs far less than new plant construction and meets energy needs with zero pollution. Beyond that the cap creates a continuing incentive to find cheaper and more effective ways to minimize pollution -- an incentive that must be enhanced if we are to achieve continued economic growth without environmental degradation.

Those who claim that the cap may constrain the ability to build new plants are simply ignoring the numbers. In the absence of a control program EPA predicts total U.S. utility SO₂ emissions changes between the years 2000 and 2010 ranging from a reduction of 1.4 million tons to an increase of 1.3 million tons. With a cap in effect even the high growth forecast would be lower than 1.3 million tons because of the added incentives for energy efficiency and better SO₂ control. To offset whatever remaining SO₂ may be associated with new plant construction, industry will be able to draw on a pool of over 14 million tons of SO₂ that will still be emitted even after the rollback program is completed.

As one example of the availability of allowances consider the many existing, aging power plants that will still be in operation after the year 2000. Much of this capacity will be emitting SO₂ at

a rate of 1.2 pounds per million Btu. By contrast, EPA's analysis of the Bush bill states that new coal plants can be built with available technology and emit no more than 0.04 to 0.3 pounds per million Btu depending on coal sulfur content. This means that for each 1000 megawatts of existing old plants that are retired or repowered, emission allowances will be freed up for between 4000 and 30000 megawatts of new capacity.

The Administration bill exempts existing sources that are below a 1.2 pound rate from the requirement to acquire allowances if they increase their pollution. This exemption concerns us, particularly as it affects the western United States where many such plants are located. If significant increases in the West occur, they will impose large environmental costs. The National Park Service has concluded that emissions increases in the West pose a threat to visibility and other air-quality related values in the parks. Other studies have shown the extreme vulnerability of high mountain lakes in the West to additional acid rain loadings.

We believe these studies warrant a policy of preventing emission increases in the West. Existing emissions inventories indicate that there remain many opportunities for cost-effective emissions reductions at today's western plants that can offset emissions added by greater generation. We believe the burden of persuasion should be placed on those who argue against a policy of preventing western emissions increases to show that we cannot afford such a policy. We do not believe it is necessary to

threaten the high quality of the West's air with additional pollution. The West can have both continuing clean air and added electric generation. But it will not have both if existing plants are permitted to increase their pollution levels.

The Mitchell-Baucus proposal calls for credits for states where more than half the coal-fired generators are equipped with "scrubbers." If this provision simply exempts these states from further reductions below today's levels it may be compatible with environmental needs. If, however, the provision would allow such states (most of which are located in the West) to increase their emissions above today's levels, it would pose threats to western air quality as great as (or possibly greater than) the Bush bill exemptions discussed above. We urge that this provision be drafted to prevent any such increases.

Repeal of NSPS Requirement.

The Mitchell-Baucus proposal would require EPA to issue a revised New Source Performance Standard for coal fired power plants that would eliminate the current requirement for a minimum percentage reduction of input sulfur. This is a controversial proposal that raises a number of issues.

From the Coalition's perspective the number one issue is whether the replacement NSPS will assure that each new plant emits no more pollution than it would have under the current regulation.

Percentage-reduction repeal proposals have been considered

several times since 1981. It has always been the Coalition's position that we would support any NSPS formulation that achieves the same level of environmental control in practice. We are not wedded to any formulation of NSPS. We do believe that all new power plants should meet emission levels no greater than can be achieved with state-of-the-art control methods.

The federal NSPS acts as a nationwide performance floor. It works together with state laws and the PSD program to foster the application of technology and technological improvements. The current NSPS complements these other programs; it does not duplicate them. A 1982 study of "BACT" decisions made under the PSD program before and after adoption of the current NSPS demonstrates this fact. Of 46 BACT decisions for coal-fired power plants issued before the current NSPS was issued, only seven required an emission limit better than 1.2 pounds. Of 46 BACT decisions issued after the NSPS issued up to the date of the EPA study, all but four required emission limits more stringent than 1.2 pounds. The national average permit level was 0.6 pounds and the average for the West was 0.16 pounds. The lesson of experience is clear -- the BACT requirement by itself does not assure strong controls. It must be coupled with a demanding minimum performance level in the NSPS rules.

Similarly, the cap that is proposed in the pending bills is a complement to but not a substitute for building new units as cleanly as possible. This is especially true in the West.

The still pristine air quality in much of the West is a

treasure that is unique in the world among highly industrialized nations. Visitors from all over the globe come to marvel at the spectacular beauty of landscapes where they can see for 60, even 100 miles, because of the clarity of the air. The damage from pollution added to these areas from new plants could not be compensated for by reductions in another region hundreds of miles away. Thus, the national cap by itself cannot protect these special western resources; it must be complemented with requirements that each new plant proposed for such areas be as clean as we can build it.

It would be short-sighted and foolish to invest billions of new dollars on energy sources that are less clean than today's technology -- demonstrated technology, reasonable cost technology -- can make them.

The Mitchell-Baucus proposal attempts to meet this imperative by requiring that EPA issue a new NSPS that meets the same emissions rate that would be achieved by complying with the current NSPS. We believe very clear language is necessary to guide EPA in the selection of such emission rates.

Let me add that we regard the NSPS for nitrogen oxides from coal-fired plants to be outdated and much weaker than the reach of today's best technology, abundantly demonstrated in Japan and Europe. We would look forward to EPA's promulgating a much more restrictive NOx standard under the Mitchell-Baucus mandate.

Timing of Reductions.

In our view, technology would permit a 10-million-ton reduction to be accomplished in as little as five to seven years. Means to achieve the reduction --- scrubbers, fuel switching, coal washing, increased energy efficiency -- are available today. The Federal Republic of Germany retrofitted essentially its entire generating capacity with advanced SOx and NOx controls on a similar timetable.

We regard longer timetables as essentially politically driven. Ten years seems to us the outside limit of a program. An accelerated interim program is as important: given the cumulative nature of the acid rain problem, every ton of reduction is important. The sooner we begin, the sooner the environment will begin to benefit. We support a five million ton reduction by 1994 as an achievable first step.

Costs and Other Economic Impacts.

Another major area of concern, of course, is the cost of the program, both the direct cost of control and the indirect economic consequences for the energy industry and for power consumers. The annualized cost of the S. 1490 acid rain program, according to EPA's latest estimates, would be about \$3.5 to \$4.5 billion. That is a large dollar amount but compared to the utility industry's annual operating costs of over \$150 billion, it represents only a modest increase in the cost of electricity.

"Regional Equity".

I know the question of "regional equity" is a major concern for many members. Acid rain control bills tend to expect the most pollution control from those states that have the highest emission rates, because there is little doubt that, for the nation as a whole, large reductions from uncontrolled highly polluting power units in the Midwest and Southeast are the most cost-effective means of reducing acid rain.

But this allocation formula has been characterized by some as unfair to regional interests, unless the costs of clean up are shared broadly. Others argue that polluting states should pay the costs of clean-up because they have benefitted unfairly for years by exporting the environmental and public health costs of pollution downwind.

In my opinion, Congress' deliberations should accept that there are good arguments on both sides of the cost-sharing issue. The states that burn high sulfur coal have enjoyed the short-term economic benefit of avoided pollution control costs. Some downwind states have absorbed two costs --- the cost of controlling their pollution and environmental damage caused by upwind emissions.

On the other hand, substantial, abrupt increases in the cost of electric energy could be disruptive to the regional economy and difficult for individual ratepayers. And if the most cost-effective national strategy for dealing with acid rain is to concentrate reductions in the Midwest and Southeast, this supports a claim for sharing some of the cost of the national strategy.

With strong arguments on both sides, there is probably no single right answer. A majority in Congress may well support a program that eases the short-term financial impact of the program on particular states. In the past, we have supported creation of financing mechanisms to spread the cost of acid rain cleanup regionally and nationally. Emission "allowance" trading schemes, which we support in concept, could foster partial cost sharing. We have supported as well, proposals with no explicit provisions for cost-sharing.

We will support any or all of these approaches again if the fundamental structure of the program is sound -- if it achieves the necessary reductions on an accelerated timetable.

Otherwise, it will be the human and natural environment that will continue to absorb the economic costs of acid rain -- lost resources, lost jobs, lost health. And those costs are just as real and just as painful as any burdens of cleanup.

As for the impact of an acid rain program on the energy sector, there is literally no formulation other than stalemate that will satisfy every energy interest -- or indeed, that is even predictable in advance. Energy use forecasts are just that, forecasts, with much less reliability than next week's weather predictions.

The nation cannot afford to become ensnared in the web of competing energy interests just as we seem to be breaking out of political stalemate. Let us attempt to write a program that is as balanced as prudence and the needs of the environment allow. Any

such program will create new markets for all clean-energy sources and technologies.

Mr. Chairman, this completes my prepared testimony. I will be delighted to answer questions from you and your subcommittee.

ACE

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Testimony before
The U.S. Senate Environment and Public Works Committee
Subcommittee on Environmental Protection
October 3, 1989

Mr. Chairman and members of the Committee, I am Harry Storey, President of the Alliance for Clean Energy, or ACE as we are known. ACE is a coalition of 25 eastern and western low sulfur coal producers, users and transporting companies. We are pleased to be given the opportunity to discuss with you our position on acid rain control legislation.

ACE formed 6 years ago for the sole purpose of dealing with the issue of acid rain control legislation. Our objective has been to make sure that certain principles are included in any acid rain legislation. These principles include freedom of choice for utilities to decide how they will make emission reductions, a cost effective, flexible approach, and a polluter pays approach. We believe acid rain legislation should set emission standards that Congress and the Administration deem necessary to protect and improve the environment and grant industry total flexibility in meeting the allowed emission levels. This approach will result in the electric consumers getting the maximum environmental benefits for each dollar they pay. Legislation has been offered in the past which was purported to be freedom of choice, but the standards were set so low, that the only way the standards could be met were through "scrubbing". Consumers should not be required to pay more for environmental protection than they need to, and they shouldn't pay for the cost of market protection in the guise of forced scrubbing.

On August 2, 1989, ACE announced its support of the Administration's Acid Rain Title of its Clean Air Legislation, **S. 1490/H.R. 3030**. We applauded it because it is a freedom of choice approach, and the trading mechanism allows for flexibility in meeting

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its tough standards. It takes a "polluter pays" approach. In offering our support, however, we offered recommendations for amendments to improve the bill.

We believe the provision in S. 1490 which applies to the cleanest plants in the country, New Source Performance Standards (NSPS) plants should be changed to allow these plants to operate at their permitted rate. These plants have already paid to clean up and are meeting stringent standards. The bill also impacts more severely on some utility systems than others because of the '85, '86, '87 base year which determines the SO₂ tonnage a plant can emit after the year 2000. We recommend that utilities be given the opportunity to select three consecutive years between '80-'87 as their base years.

In the long run, the 100% offset for "greenfield" plants in S. 1490 could result in the decreased use of our nations most abundant energy resource, coal. This provision causes some concern for those companies--utilities and independent power producers-- who plan to construct new generating facilities impacting on economic growth. Their concern is one of the availability and cost of emissions offsets. As a compromise, we recommend that this 100% offset cap be changed to allow new generating facilities to emit up to .3 lbs of SO₂ per mm BTU's without offsets. This change would guarantee that no new electric generating facility would be delayed or cancelled due to lack or cost of emission offsets. This standard represents a 50% reduction in the SO₂ emissions of current NSPS plants. This is a 75% reduction from the NSPS standard of 1.2 lbs per mmBTU.

S.1490 is a stringent environmental bill that will be difficult and costly to meet, but because this bill allows the reductions to be met in a cost effective way, it can be accomplished without undue economic hardship on any region of the country. An example of the flexibility contained in this bill is the 2.5 lbs/mmBTU limit in the first phase reduction by December 1995. The 4.5 to 5.0 million ton reduction in the first phase will be accomplished by meeting a 2.5 lbs/mmBTU standard at approximately 107 plants in 20 states. These plants will

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be allowed to select from a market basket of control options and, in addition, they can use cost effective emission averaging within their system.

We are pleased, Senator Baucus, that your bill is very similar in its structure to the Administration bill. In particular, we applaud your provision to repeal percentage reduction which has imposed substantial and unnecessary costs on consumers all in an effort to manipulate coal markets to the disadvantage of western and eastern low sulfur coal. We are also pleased that you have modified the 1985 emissions rate cap.

It appears that the major difference in your bill and the Administration's is that in the first phase you name 20 plants in 11 states which are required to meet a 1.1lb/mBTU standard by January 1, 1995. This will concentrate the economic impact on a much smaller area, reduce the number of compliance options, and compress the compliance time, therefore increasing the cost of the reductions.

If our understanding of the language in your bill is correct you have gone in the right direction to correct this inequity by allowing utilities systems to trade systemwide. We recommend that you strengthen the trading system by allowing Phase II plants to opt into the trade in Phase I. This would result in earlier SO₂ emissions reductions. Since these reductions will be made earlier, the cumulative SO₂ reductions will be greater. Of course, there has to be some "carrot" provided for plants to make these early reductions. They should be given permits for early reduction which can be used for trading in their phase II reduction requirements and beyond. If there are only 20 plants in the program, there will be virtually no one to "trade" emissions with. Therefore, utilities compliance options to make will be limited to scrubbing or using extremely low sulfur fuels which will greatly limit the option of fuel switching as a means of compliance. We are sure that you do not intend for this to happen.

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In the EPA options paper prepared for President Bush before he introduced his bill, the EPA offered pros and cons of having Phase I target over 100 utilities at a 2.5 standard versus 20 plants at a 1.1 lb standard. They said regarding the 20 plant option -- "It seems unfair to subject some plants to one standard, and other plants to another, less stringent standard." It further goes on to say that it could force greater use of scrubbers because of its narrow focus, and it concentrates cost effects on narrow geographic regions, increasing the political pressure for subsidies. A 20 plant option puts you on the "slippery slope" towards cost sharing. A broader based program such as the 107 plants in S. 1490 eliminates the justification for cost sharing.

The objective of both bills is the same, a ten million ton SO₂ reduction in approximately ten years. The only question remaining is not one of the final destination but rather what path we select to travel. Again, we urge you to support a free market approach, maximum flexibility of control options and timing. We therefore recommend that you substitute Phase 1 from S. 1490 or at the very least create a true trading system by allowing more plants to participate in Phase 1.

Thank you Mr. Chairman. I will be happy to answer any questions.

~~NATIONAL COAL ASSOCIATION~~

STATEMENT OF

RICHARD L. LAWSON

PRESIDENT

NATIONAL COAL ASSOCIATION

HEARING ON

THE RE-AUTHORIZATION OF THE CLEAN AIR ACT

before the

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

OCTOBER 3, 1989

SUBCOMMITTEE ON
ENVIRONMENTAL PROTECTION
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

HEARINGS ON
THE RE-AUTHORIZATION OF THE CLEAN AIR ACT

STATEMENT OF THE NATIONAL COAL ASSOCIATION
RICHARD L. LAWSON, PRESIDENT

OCTOBER 3, 1989

Mr. Chairman, I am Richard L. Lawson, President of the National Coal Association. National Coal Association (NCA) is an organization which represents producers of coal from the smallest to the largest. NCA members, which comprise the majority of coal production in the United States, operate in all producing regions of the country and mine all qualities of coal. I appreciate this opportunity to express the coal industry's views on the acid rain proposals now pending before this committee.

Make no mistake, the coal industry supports the goals of cleaner air. Our industry, in conjunction with our major customer the utility industry, has worked hard over the past two decades to achieve this goal through compliance with the standards set out by the current Clean Air Act as amended. These efforts have paid off. As the Environmental Protection Agency (EPA) has stated: "the data clearly shows that over the long term the Clean Air Act has worked well in reducing pollution . . .".¹

We firmly believe however, that environmental goals must be founded on sound science and that they must be reasonably balanced with the equally important goals of energy security and economic growth.

We know that the President and his Administration recognize the importance of this balance to the future of our nation as demonstrated by the current effort of the Department of Energy to draft a National Energy Strategy. This study and its recommendations, which are being prepared with broad input from all sectors, should be the cornerstone of our attempt to find that required balance between energy, economics and the environment.

Unfortunately, the acid rain proposals now pending may be in direct conflict with this work. Instead of coordinating with and complementing a reasonable energy strategy - and the policies that should flow from a well considered plan - amendments to the Clean Air Act as now drafted predetermine our energy policy.

¹ "National Air Quality and Emissions Trends Report, 1987" The U.S. Environmental Protection Agency, 1988.

Most proposals to amend the Clean Air Act, taken in their entirety, would also become the de facto industrial policy of the United States as the regulations, controls and costs that would be placed on industrial operations will have a significant effect on determining the international competitiveness, levels of output, locations of businesses, and employment levels of all affected industries.

We urge the subcommittee to look carefully at the effect the various acid rain proposals will have on the potential for economic growth and stability and on our international competitiveness at home as well as abroad. The fundamental re-ordering of a large part of America's industrial base, which is suggested by these proposals, should not be decided - or even debated - without the benefits of an extensive analysis of its effects on all these factors. This has not been done.

Beyond the reason of conflict with Administration efforts to develop a national energy strategy, acid rain legislation should not be rushed through the Congress for two reasons:

. First, the results of the 10 year research program conducted by the Congressionally mandated National Acid Precipitation Assessment Program (NAPAP)² to determine cause and effect of acid rain are beginning to emerge and will be available in their entirety in September, 1990. In 1987, NAPAP's Interim Report concluded that we do not face an environmental crisis that demands precipitous action. The final report, which will be a comprehensive integrated assessment on the causes and effects of acidic deposition, combined with analyses of the costs and effectiveness of various emission reduction strategies may support a course of action that differs significantly in cost and approach from those suggested in the proposals now pending.

. Second, as numerous private industry and government studies have shown, with respect to sulfur dioxide, the Clean Air Act is working. Sulfur dioxide emissions from power plants and other industrial stationary sources have declined significantly since enactment of the original Clean Air Act. Commercialization of the clean coal technologies now being developed will result in an equal or greater amount of emission reductions at significantly lower cost than would legislation that mandates specific technology and/or a sharp emissions reduction within a very short period of time.

² The Interim Assessment of the National Acid Precipitation Assessment Program, November, 1987,

COMMENTS ON ACID RAIN PROPOSALS NOW PENDING BEFORE CONGRESS.

NCA strongly opposes enactment of the acid rain proposals now pending before this committee, including S.1490 the President's proposal. The "Clean Air Act Amendments of 1989" would, if enacted, effectively set the direction of future energy policy of the United States and would make our goal of balancing energy security and economic growth with environmental protection much more difficult.

As this committee is well aware, adequate and reasonably priced energy supplies are imperative to sustain long term economic growth. In the United States, coal is an integral part of that energy supply and is expected to continue over the long run as a primary energy feedstock.

Coal accounts for almost 80 percent of our nation's fossil fuel resources and provides nearly 25 percent of the total energy required in the United States today. Of particular importance to today's hearing, over half the electricity produced in the United States, 57 percent, is generated by coal. If oil instead of coal had been used to generate that electricity in 1988, the United States would have had to double our oil imports at a cost to the economy of over \$42 billion.

But energy supplies and thus energy security and continuing economic growth are vulnerable on two fronts: through the continuing increase in dependence on imported energy and from pending shortages in electrical generating capacity.

Our dependence on imported energy is rapidly increasing as illustrated in the July statistical report of the American Petroleum Institute which stated that total imports of oil in July averaged 8.6 million barrels per day, 50.4 percent of supply and the highest monthly level since 1977. The Department of Energy projects a 55 percent dependence on imported oil by 2000.³ It goes without saying that the fiscal and balance of payment ramifications of imports of this magnitude will have a significant, and negative, effect on our economy.

Of equal importance to maintaining the future economic health of the nation is the probability of regional shortages of electric generating capacity. The economy is becoming more dependent on reasonably priced electricity to meet end use energy requirements. To illustrate, in 1976, electricity met 29 percent of end use energy consumption needs. In 1988 this figure was 36 percent and by 2000, DOE projections show that 42 percent of end use energy requirements will be met with electricity.⁴

³ 1989 Annual Energy Outlook, Long Term Projections, Energy Information Administration, Department of Energy, January, 1989. Base case estimates are cited throughout this statement.

⁴ This estimate represents only the electricity produced and/or distributed by electric utility companies. Therefore, the estimate of dependence on electricity understates the total due to power requirements met by industrial self-generation.

Reasonably priced electricity over the past decade has meant economic growth and an improvement in the competitiveness of U.S. manufactured goods, both at home and abroad. Since 1980 our GNP has increased - in real terms - by over 26 percent. According to the Department of Commerce the f.a.s. value of our merchandise exports (in 1982 dollars) almost tripled from 1982 to 1988. These accomplishments mean jobs, they mean a rising standard of living. Without reasonably priced energy and readily available electricity the accomplishments of the past cannot continue.

It is well documented that for each percentage increase in GNP there is an approximate one percent increase in the demand for electricity. While that relationship may be altered in the future due to conservation and demand management by utilities, economic growth will still require an increase in the use of energy, i.e. electricity.

In early 1989 both the Department of Energy and the Edison Electric Institute released reports which forecast that demand for electricity will increase at an average annual rate of 2.4 percent between 1988 and 2000.⁵ These demands cannot be met with current and planned generating capacity. A report issued in late September by the National Electric Reliability Council⁶ shows that utilities are planning to add approximately 72,200 MW of new capacity between 1989 and 1998. This includes 18,100 MW from non-utility generators most of which are not yet under construction. This represents capacity to handle less than a 1.5 percent annual growth in electricity demand over the next decade and caused NERC to conclude:

"While aggregate utility plans will support the forecast growth in peak demand, there is a widespread trend of actual peak demands consistently exceeding forecasts. If this trend continues, supply deficiencies are likely by the early 1990's in the eastern half of the United States and Canada."

Unnecessarily restrictive legislation could exacerbate these shortages and make it much more difficult and costly to meet energy/electricity needs in the future.

Where does coal fit into the picture? Coal, which generates 57 percent of all the electricity produced in the United States, has kept electric rates down. This is a major reason that manufacturing plants in the midwest and south - which account for over 25 percent of our export activity have become more competitive at home and internationally. Under S.1490 electric rates would rise sharply in these coal dependent areas, eliminating the competitiveness that has been gained over the past few years. This would cost manufacturing jobs and jobs in support industries. Energy intensive manufacturing, such as aluminum, would move offshore and be permanently lost.

⁵ DOE - 1989 Annual Energy Outlook; the Edison Electric Institute, Electricity Future: America's Economic Imperative.

⁶ 1989 Reliability Assessment: The North American Electric Reliability Council, September, 1989.

Several supporters of acid rain legislation have stated that the increase in electric rates that would be precipitated in the industrial heartland of America would not be harmful since rates in these manufacturing dependent areas are now significantly lower than those in the remainder of the country. They argue that S.1490 would only "level out" rates throughout the nation. We believe that such a philosophy is counterproductive to our nation's competitive performance potential in the international marketplace.

We believe that rather than increasing electric rates in the states that comprise our industrial base, we should be enacting a national energy policy to decrease electric rates and energy costs in the sections of the nation that are currently high. Our goal should be a nation-wide increase in the use of lower cost coal with more efficient clean burning technologies - which would avert sharp increases in all electric rates.

The development of modern technologies means that coal can be extracted, transported and burned in an environmentally benign manner. Coal is available over the long term. New technologies to use coal increase conversion efficiencies. The use of coal is cost effective in both the short term and over the longer run. Coal means reasonably priced electricity, coal means that the United States is competitive in the world market. In short, coal is a primary component of our nation's energy and economic future.

With this prelude, let us discuss several of the critical issues raised by acid rain provision pending before the Congress.

REQUIRED EMISSION REDUCTIONS WILL BE OVER 12 MILLION TONS

The predominant premise of acid rain legislation is to effect a 10 million ton per year reduction in SO₂ emissions by the year 2000, measured from a 1980 base. Although advertised as a "10 million ton reduction bill", the President's proposal as currently constructed will result in greater reductions as it does not fully recognize either emission reductions made by the utility sector since 1980, or the 2.7 million ton emissions reduction that was made in the industrial sector between 1980 and 1985. Additionally, the proposal gives no credit to the potential for additional emission reductions which will occur in the industrial sector before 2000.

A recent Edison Electric Institute ⁷ analysis shows that utilities alone will be forced to reduce emissions by almost 10 million tons by 2000 as measured against 1980 levels. NCA's analysis of the industrial sector which, according to NAPAP has already reduced SO₂ emissions by 2.7 million tons from 1980 thru 1985, shows that we can conservatively expect an additional 1.1 million tons reduction from industry by 2000 for a total reduction by industry of 3.8 million tons, 1980 - 2000. Under the guidelines of

⁷ "Economic Evaluation of H.R. 3030/S. 1490 Clean Air Act Amendments of 1989, Title V, The Acid Rain Control Program". Edison Electric Institute by Temple, Barker and Sloane, Inc., August 30, 1989.

S.1490, by the year 2000 SO₂ emissions from all sources could be almost 13.5 million tons lower than in 1980, far in excess of the President's stated 10 million ton goal.⁸

To our knowledge there is no scientific basis, in terms of environmental impact or benefits, for either a year 2000 compliance date or a 10 million ton reduction goal, to say nothing of one that is greater. However, it is beyond dispute that the magnitude of the reduction requirement over the compressed time frame will disproportionately escalate the cost of the compliance program. According to the Edison Electric Institute report cited above, scaling back requirements to match the stated 10 million ton goal would reduce costs of compliance by at least 30 percent.

A complete analysis of the actual emissions decline since 1980 shows that extension of the compliance time frames now proposed, and a reduction of the emissions target - through elimination of the proposed tonnage cap on emissions from existing plants and elimination of the offsets proposed for new capacity - are clearly possible without jeopardizing a 10 million ton reduction goal.

The widely recognized NAPAP inventory for 1980 should be used as the base from which sulfur dioxide emission reductions are measured and the legislation should so state. Use of this base would result in a true 10 million ton emission decrease by 2000. An initial phase reduction of any legislation should set a target that gives full credit for the reductions made by the industrial sector since 1980.

THE CAPS PLACED ON EMISSIONS FROM CURRENTLY OPERATING PLANTS MUST BE ELIMINATED.

S.1490 requires units emitting greater than 1.2 lbs. SO₂/MMBTU to reduce their effective emissions rate to one that is below the current, and accepted, NSPS standard of 1.2 lbs. SO₂/MMBTU. This is accomplished by placing a cap on SO₂ emissions from

⁸ To summarize the results of this analysis (the industrial analysis is included in its entirety in Attachment A):

	<u>1980</u> (SO ₂ Emissions - 000 tons)	<u>1985</u>	<u>Tonnage</u> <u>Change</u> <u>1980-1985</u>	<u>2000</u>	<u>Tonnage</u> <u>Change</u> <u>1980-2000</u>
Electric Utilities	17,479	16,178	(1,301)	7,779	(9,700)
Industry	<u>9,476</u>	<u>6,836</u>	<u>(2,641)</u>	<u>5,711</u>	<u>(3,765)</u>
Total	26,955	23,014	(3,941)	13,490	(13,465)

Source: 1980, 1985 NAPAP Emissions Inventory, Version 5.0

2000: Electric utilities - Edison Electric Institute, Industrial, NCA Estimates, see Attachment A to this statement.

existing⁹ power plants that, after 2000, will be equal to the product of the baseline¹⁰ fuel use in millions of BTU's times the maximum rate of 1.2 pounds SO₂/MMBTU. Units emitting at a rate less than 1.2 lbs. SO₂/MMBTU would be capped at their 1985 average annual emissions rate.

The tonnage cap effectively precludes full utilization of units at affected utility plants if the baseline represents a period of low or medium generation except at a much lower rate than 1.2 lbs. SO₂/MMBTU, the accepted NSPS standard. Various estimates have put the effective rate that the many utilities must meet at less than 1.0 lbs. SO₂/MMBTU – and in some cases where strong growth is expected as low as 0.3 lbs.

The rate cap for existing NSPS plants will force "clean plants" to install additional controls. Plants constructed under NSPS standards, emitting less than 1.2 lbs. SO₂/MMBTU, could be forced to retrofit with technological controls (if feasible) or to fuel switch (if possible) to insure that the plant's actual emissions rate does not exceed its 1985 average emissions rate.

The tonnage/rate caps on existing plants will sharply increase costs of compliance to affected utilities. An Energy Venture Analysis report estimates that the additional cost will be over \$2 billion annually. The caps sharply reduce the flexibility that a utility has in managing its resources and must have to meet unexpected levels of demand.

It is very probable that given an unexpected short term increase in demand, such as occurred in 1988, a utility system that is predominantly coal-fired could approach the end of a year faced with some hard choices: shut down capacity or pay exorbitant fines on excess emissions – which will have to be offset in the next year.

The fact that the cap increases compliance costs is clearly shown in the EEI report referenced earlier. EEI's analysis showed that 44 percent of the costs of compliance with S.1490 will be in the states of Ohio, Pennsylvania, Indiana, Missouri and Tennessee. A full 70 percent of compliance costs will be incurred in those five states plus Alabama, Georgia, Illinois, Kentucky and West Virginia. The costs of electricity to customers will increase from 9 to 22 percent. These states are the location of over 30 percent of our manufacturing activity (measured in contribution to the national GNP). Over 25 percent of our exported manufactured goods were produced in these states. Clearly, the additional costs incurred under S.1490 will result in a decline in the international competitiveness of these industries and will result in lower output and loss of jobs in the manufacturing sector.

The tonnage cap on existing plants should be eliminated and the rate cap should be no lower than the permitted standard for NSPS plants. These standards would achieve over a 10 million ton reduction from 1980 SO₂ levels and permit utilities to

⁹ Existing is defined as a utility unit in operation at the time the bill is enacted.

¹⁰ Baseline is the average BTU of fuel consumed at unit during the 1985-1987 period.

significantly reduce rate impacts on their customers and service areas. This would provide flexibility in meeting future growth in the American economy and would ameliorate adverse impacts in all effected areas.

THE REQUIREMENT TO OBTAIN OFFSETS FOR NEW GENERATION SOURCES WILL PLACE AN ABSOLUTE LIMITATION ON COAL USE.

Proposed legislation requires all new coal-fired generating units to obtain offsets equal in amount to the tons of SO_2 that the new source will emit. Although offsets will be available from retirement of some capacity, retirement credits will not be sufficient to support long-term growth in coal-fired generation. The EEI report finds that retirement credits would only be sufficient to meet new demand if electricity increases at an annual average rate of less than 2 percent per year and non-coal units provide two-thirds of the new generating capacity required. Both are unlikely assumptions.

The offset requirement will be especially detrimental to utilities in the West and Southwest which are the two fastest growing regions of the country and represent more than half the new coal fired capacity projected to come on line thru the end of the century. Most utilities in those regions have new NSPS plants and will have few credits to use to offset emissions from new capacity.

Further, the offset requirement will preclude the use of coal in non-utility generating units (NUGS) which have been projected to play an increasing role in the nation's power generation mix. Although a NUG will have to comply with applicable NSPS requirements, a NUG must still obtain the necessary emission credits to operate. Utilities might be reluctant to provide credits if the NUG is viewed a "competitor". The elimination of coal as a practical option to the non utility generator will unnecessarily increase the cost of electricity in many areas and significantly restrict this emerging power generation option. Again, the ramifications carry over to the policies now being developed to structure a future that is economically sound and energy secure.

The offset requirement forces new capacity decisions away from coal to natural gas. While this appears to be the clear purpose of the drafters of S.1490, we have not found supporting analysis for such policy.

As pointed out in the preceding section, neither the emissions offset or the emissions cap requirements are necessary to achieve and maintain a 10 million tons per year reduction in SO_2 from a 1980 baseline. Both should be eliminated.

THE PROPOSED TRADING SYSTEM IS UNLIKELY TO ASSIST IN MEETING FUTURE ENERGY - ELECTRICITY REQUIREMENTS

Supporters of both the emission tonnage cap and the offset requirements maintain that the proposed emissions trading system will solve the problems. There are some

questions regarding this position. As DRI has pointed out,¹¹ the proposed trading scheme has a number of regulatory and legal obstacles in its path. The requirement to obtain permits for each trade - and each change in plans to trade - eliminates any flexibility that the trading system might provide. The regulations for the trading system will not be promulgated until 18 months after enactment of the bill. This is only a few months before the utility must have its compliance plan in place for Phase One. Clearly there is insufficient time to factor trading into any compliance plan.

A utility is unlikely to sell an emissions allowance to any other generating source, especially one outside its own system, if there is any possibility that the allowance will be needed in either the short or the long-term. It will be necessary for a utility dependent upon coal-fired power to "bank" emissions credits to use if demand has been underestimated for a given period and generation/emissions are higher than the utility's current allowance. What explanation would a utility give a public commission and rate payers if a credit which sold for X dollars today had to be repurchased for twice, or ten times that amount at a future date?

S.1490 WILL DISCOURAGE THE USE OF CLEAN COAL TECHNOLOGIES

Clean Coal Technologies (CCT's) are critical to the nation's future. Proposed legislation and regulation must provide time frames that are flexible and that give sufficient time for utilities, and other electric generating concerns, to use the technologies now being developed both under the U.S. Government/Industry Clean Coal program and/under programs supported by states and private industry. The use of clean coal technologies means that reductions in emissions will be greater in the long run, and will be achieved at less cost than under a program that legislates short time schedules and, possibly, mandates technologies.

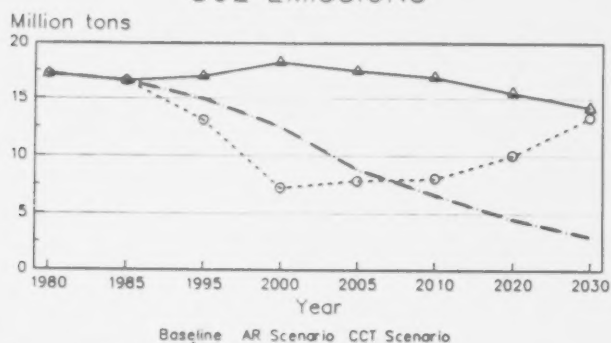
An unreleased study for the Department of Energy¹² illustrates these points. According to this study, SO₂ emissions from utilities are some 75 percent lower in 2030 under a "no acid rain legislation" scenario that allowed penetration of Clean Coal Technologies (CCT's) than would be the case if acid rain legislation were enacted. (The analysis was based on S. 1984 reported by this committee in 1988.) As Chart One on the next page shows, the level of emission reduction achieved with CCT may begin at a slightly later date, but is much more permanent. Chart Two, on page 11, shows that clean coal technologies are less expensive to the rate payer. Under a CCT scenario average real electricity rates in 2030 will be lower by some 15 percent than under acid rain legislation due, in part, to the increased conversion efficiencies of CCT's.

¹¹ "Implications of the Bush Administration's Proposed Clean Air Act Amendments: Phase 1 Acid Deposition Requirements", DRI/Mc Graw Hill Coal Planner, Summer, 1989.

¹² "The Macroeconomic Impacts of Clean Coal Technologies and Acid Rain Legislation: A Comparative Analysis," Argonne National Laboratory for the Department of Energy, DRAFT, June, 1989.

However, as these charts show, the real benefits of CCT are not seen until between 2005 and 2010 when the newer technologies have been deployed. CCT's have other advantages that contribute toward both energy security and economic goals as well as the environmental. Utilization of CCT's ensure that the full range of the United

ALTERNATIVE FORECASTS SO₂ EMISSIONS



Source: ARGUS

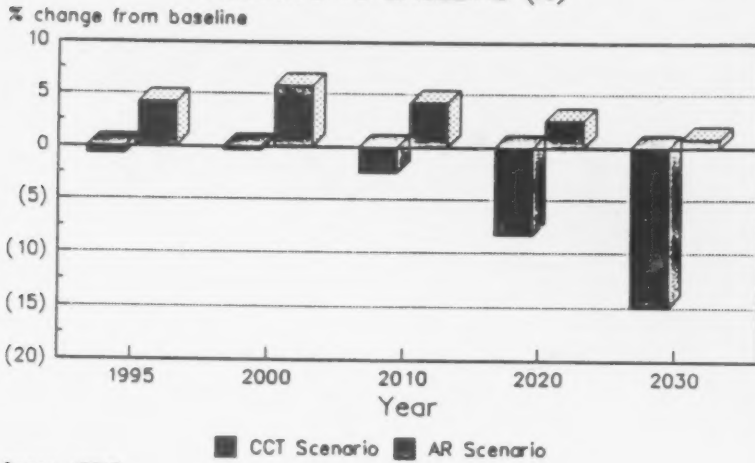
Chart One

States coal reserves can be used. Conversion efficiencies, as illustrated in Chart Three, can be as much as 6 percent to over 50 percent more efficient than a plant with current day technology, i.e. a scrubber. The improved conversion efficiencies will contribute towards lower energy costs and at the same time, address the SO₂, NO_x and CO₂ issues.

NCA is concerned that the broad market penetration of CCT's will not be possible under S.1490 compliance dates because of the very short time frame that the utility has to make plans for compliance with the standards required. This concern is helped but not obviated by the three year extension for repowered sources with a limited number of qualifying clean coal technologies or by the suggested incentives for repowering included in Sec. 515, S. 1490.

The Administration's proposal at Section 501 (a) (4) in the findings section recognizes that "improved methods are expected to become increasingly available over the next decade." It will be very difficult for a utility which must allow a minimum of four to six years to plan and install a modern day scrubber to accept the risk of electing to utilize clean coal technologies which may not be demonstrated to be commercially viable until the mid-1990's. Although the three year extension will provide some relief, S.1490's requirement for a utility to decide how to meet the Phase II requirement as

CHANGE IN REAL ELECTRICITY PRICES RELATIVE TO BASELINE (%)



Source: ARGUS

Chart Two

COMPARISON OF CONVERSION EFFICIENCIES OF COAL FIRED FACILITIES

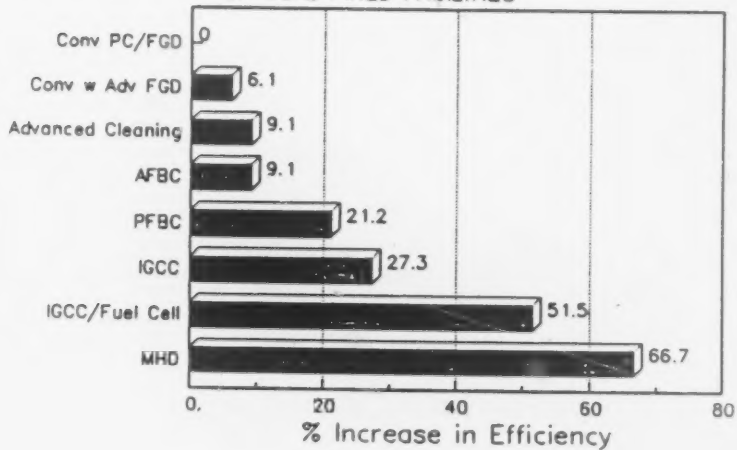


Chart Three

early as 1995, in addition to the practical reality of making a decision on how to meet the 2000 deadline, may well preclude a decision to utilize clean coal technologies.

As reflected in the Chart Four, the principal CCT repowering technologies will not be commercially demonstrated in the 1994 - 1996 time frame during which a utility executive must make his compliance decision. The proposed compliance time frames must be extended beyond 2000 for CCT's to be a viable part of a utility compliance program.

A utility that must comply with Phase One deadlines has very hard choices to make in a very short period of time. Should the utility take interim (but still costly) measures to meet a 2.5 lb. standard and hope that the appropriate clean coal technology will be available and proven in time to meet a 2003 deadline? Given the extraordinarily high penalties if deadlines are not met, and given that a 1.2 lb. standard (with tonnage emission cap) must be met by 2000, utilities will most likely take the lower risk approach for compliance.

The decision to take this course of action will be reinforced by the risk averse posture of most public utility commissions and the utility's obligation to serve. This scenario would eliminate the opportunity for clean coal until well into the next century - because once a capital investment is made, a utility must live with that decision and that technology for the life of the plant.

Estimated Deployment Time Period for ICCTs

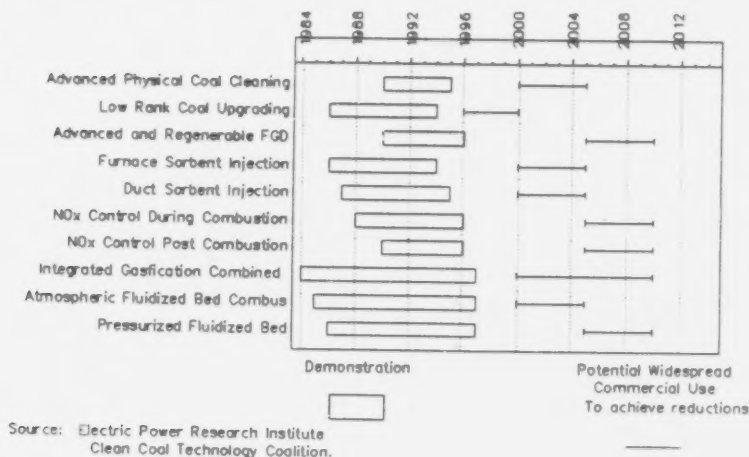


Chart Four

We are especially concerned that S.1490 will remove much of the potential for repowering - and clean coal - from the market place. Our analysis shows that 50 GW of the total 82 GW affected by Phase One of the President's proposal are units between 20 and 30 years of age - the best candidates for repowering with Clean Coal technologies. These units are almost 80 percent of the capacity of that age group in the states affected by Phase One. If a decision is made to use current compliance options, or to install current technologies, clean coal technologies will not be a future option.

As a consequence, the benefits of emerging clean coal technologies, that include significant NO_x reductions in addition to equal or better SO₂ reduction with increased fuel conversion efficiencies, could well be foregone for a large segment of the nation's coal fired power generation base.

Congress should:

- 1) Support an extension of time for Phase Two installation of clean coal technologies until at least 2005 rather than the current proposed extension of 2003. This extra time will encourage the commercialization and deployment of these technologies, and maintain them as an option for reducing sulfur emissions.
- 2) Support the use of currently available CCT's for units impacted by Phase One requirements and by providing an extension of time for Phase One plants choosing CCT to meet the applicable requirement for Phase Two. The technologies eligible for such extension, including retrofit technologies, should be named by DOE;
- 3) Provide flexibility in the determination of technologies eligible for inclusion in the Phase Two extension by charging DOE with the task of designating technologies that can be used under this bill and with reviewing and updating the list on a periodic basis; and,
- 4) Support an extension of the benefits and incentives suggested for repowering with CCT to new greenfield plants.

Finally, NCA is concerned that the failure to exempt so-called "retrofit" technologies from New Source review under the "WEPCO Interpretation" may well preclude utilization of technologies which do not achieve a 90 percent reduction but promise to achieve more cost effective reductions than existing technologies in utility compliance plans. The "WEPCO Waiver" for CCT demonstrations under the DOE program should be expanded to all applications of CCT's.

In conclusion, I would like to review two basic reasons that we continue to believe that acid rain legislation of any type is premature at this time. Both merit the Subcommittee's attention.

IT WOULD BE PREMATURE TO ENACT LEGISLATION WITHOUT THE BENEFITS OF THE 10 YEAR RESEARCH PROGRAM CONDUCTED BY THE CONGRESSIONALLY MANDATED NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAM

It would be premature to enact legislation without the benefit of the results of the 10 year research program conducted by the congressionally mandated National Acid Precipitation Assessment Program (NAPAP). This study was initiated because Congress recognized the many scientific uncertainties that existed concerning the acid rain issue and because Congress realized that it could not rationally address the subject until major scientific gaps in our knowledge had been closed.

The \$500 million NAPAP study involves almost 1000 scientists from 40 universities in the United States, Canada and Great Britain, 12 federal agencies, four national laboratories and various other research institutes. NAPAP will conclude in September, 1990 with the publication of a comprehensive integrated assessment on the causes and effects of acidic deposition, combined with analyses of the costs and effectiveness of various emission reduction strategies.

The results of the NAPAP Assessment are just now beginning to emerge and will be available in their entirety within the next year. The acid rain legislation now pending prejudices these results and the scientific studies, technology evaluations and economic analyses - including the planned analysis of the President's proposed legislation¹³ - that will be included in the final reports.

Of particular importance for this debate is the interim assessment that was published in late 1987. This report invalidated much of the speculation that projected catastrophic damage to the environment. The study concluded that:

"While some lakes and streams in sensitive regions appear to have been acidified by atmospheric deposition at some point in the last 50 years, the data currently available suggest that most watersheds in the glaciated northeast are at or near steady state with respect to sulfur deposition and that further significant surface water acidification is unlikely to occur rapidly at current deposition levels."

¹³ For a complete description of all the emissions reductions cases to be analyzed by NAPAP see section 2, "Assessment Plan Update", NAPAP, August, 1989. The document also includes a schedule for the release of all portions of the final NAPAP Assessment.

These 1987 findings were substantiated by a report released by NAPAP in late August, 1989¹⁴ which finds that future reductions in SO_2 could improve damaged lakes in the Northeast but, if emissions remain constant, lakes will not incur additional damage.

The Interim Report also concluded that: unexplained forest damage is very limited and acid rain is not now thought to be the cause. Importantly the 1987 data found that "the risk of human health effects from airborne sulfur compounds is being managed by ongoing control programs that cap ambient concentrations."

These points have been substantiated by subsequent NAPAP materials which conclude that under a constant SO_2 emissions scenario little change will occur in Northeast lakes; that since forest damage is not caused by acid rain there will be little change under the same scenario except over a 50 year period at very high elevations; that no changes in crop yields are expected under a constant emissions scenario; and that there would be no change in human health effects from that seen at the current time.

I would like to point out that the conclusions presented both in the interim report and in later documents published by NAPAP are directly opposite the "findings" included in Title V of S.1490, Sec. 501 (a)(1) which states "the Congress finds that the presence of acidic compounds and their precursors in the atmosphere and in deposition from the atmosphere represents a threat to natural resources, ecosystems materials, visibility and public health."

Data developed by NAPAP suggest that sulfur dioxide emissions comprise only one-third of the emissions considered to be acid rain precursors. NO_x and VOC emissions must be addressed as well and will be the subject of NAPAP assessment. Further, there are indications that the interaction between these emissions, not the quantity of individual emissions may be a key factor in determining environmental impacts.

Since NAPAP scientific data has demonstrated that we are not facing an environmental crisis that demands precipitous action, we believe it is not prudent to enact costly emission control legislation without the benefit of the NAPAP research efforts and analysis of control strategy options. Indeed, it is quite likely that the NAPAP report will support a course of action that differs significantly, both in approach and cost, from those approaches suggested by S.1490 and other acid rain bills.

¹⁴ "Future Effects of Long-term Sulfur Deposition on Surface Water Chemistry in the Northeast and Southern Blue Ridge Province: the Direct/Delayed Response Project", August, 1989, NAPAP.

SO₂ EMISSIONS HAVE DECLINED SINCE ENACTMENT OF THE CLEAN AIR ACT

The fact is that SO₂ emissions have declined significantly since enactment of the original Clean Air Act and its amendments of 1977. Contrary to fact, acid deposition control legislation appears to be motivated, at least in part, by the perception that the current law is not working. The assumption is that industry does not share a concern for the environment and therefore, unless Congress legislatively mandates additional short term reductions in the level of SO₂ emissions, these emissions will again rise.

According to government estimates, almost \$110 billion has been funneled into the U.S. sulfur dioxide control program since its inception. These expenditures have been made by basic industries, the utilities and the coal industry. The results attest to the success of the program. Federal ambient standards for SO₂ emissions are being met. As early as 1986, the Council on Environmental Quality stated that "It is clear that the SO₂ problem, from the standpoint of public health, has essentially been eliminated in the nation."¹⁵

NAPAP's Interim Report, released in November 1987, found that over the 1973-1985 period total man-made emissions of SO₂ in the United States from all sources have decreased by 27 percent. The report went on to observe: "of particular note is that the trend has continued in recent years, 1980-85, when the total net reduction of national sulfur dioxide emissions from 1980 to 1985 is just over 10 percent."¹⁶ Indeed, the U.S. Environmental Protection Agency's annual "National Air Quality and Emissions Trends Report, 1987" reinforces these findings and states that "the data clearly shows that over the long term the Clean Air Act has worked well in reducing pollution . . ."

Since 1973, SO₂ emissions from utilities have declined from 19.0 million tons to 14.88 million tons or by 21.7%. As illustrated in Chart Five during the same time that emissions were declining, utility coal consumption increased by 85 percent or by 329 million tons. In addition to supporting growth in electricity demand, coal has been used as a significant wedge against an increase in the use of imported energy. Use of coal has allowed utilities to cut use of petroleum, a more expensive and less reliable energy source, by more than 60 percent since peak consumption in 1978.

Between 1980, the year in which the 1977 Clean Air Act Amendments were just beginning to take effect, and 1987, emissions of sulfur dioxide at coal fired electric power plants in the United States declined by 1.3 million tons, or by 8.0 percent. The decline in the average emissions rate was even more significant, a fall from 2.68 lbs. SO₂/MMBTU in 1980 to 1.97 lbs. SO₂/MMBTU in 1987, or a 25.6 percent drop. If SO₂

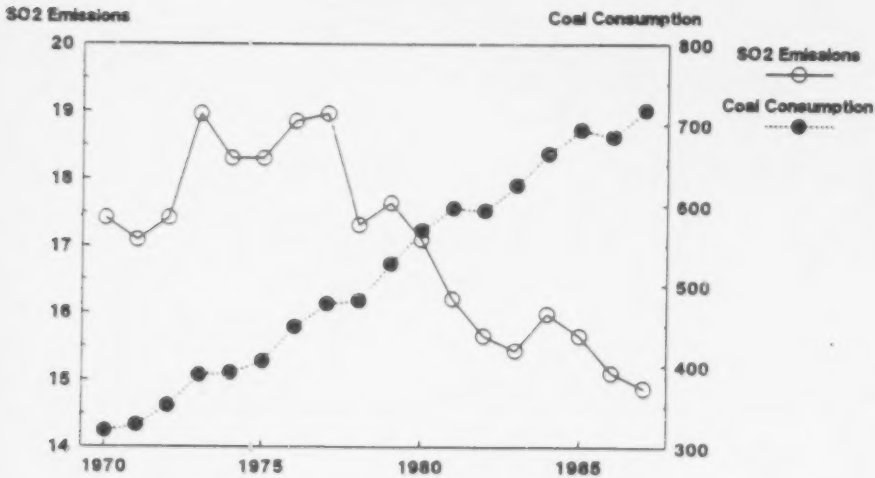
¹⁵ Council on Environmental Quality, Environmental Quality 15th Annual Report, 1986.

¹⁶ Interim Assessment: The Causes and Effects of Acidic Deposition, Volume I, Executive Summary, The National Acid Precipitation Assessment Program, 1987.

emission rates had not declined during the seven year period, total SO₂ emissions from utilities would have been over 20 million tons in 1987 and not 14.8 million tons ¹⁷.

UTILITY SO₂ EMISSIONS AND COAL CONSUMPTION

(Millions of short tons)



Source: EPA and DOE

Chart Five

Industry analyses have found that the cause of the decline can be attributed to four distinct reasons: the result of the emission limit imposed on new plants that is more stringent than that for plants which were operating before the 1977 Clean Air Act requirements took effect; the movement of economic activity and electricity demand to regions which use lower sulfur coals and newer generation technology; substituting lower sulfur coals in power plants throughout the country; and, retrofitting new technology, in this case, scrubbers, onto plants not subject to the new source performance standards of the 1977 act.

¹⁷ "National Air Pollutant Emission Estimates, 1940 - 1987", EPA, March, 1989.

The sharpest decline in emissions, 1.2 million tons between 1980 and 1987 occurred in the regions of most concern to the Canadians, the "border" regions from North Dakota east along the Canadian border to Maine. (This is 92 percent of the total national decline in emissions and is a full 50 percent of the two million ton reduction by 2000 from this region that has been requested by the Canadians.) This region, that has made the most progress in reducing emissions, the industrialized heartland of America, is the region most heavily affected by S.1490 and other acid rain proposals.

Proponents of acid rain legislation often cite forecasts which show an increase in SO₂ emissions as the underlying reason that more stringent controls on power plants are necessary. Based on the experience to date however, we believe that the constantly revised projections of rising SO₂ emissions must be discounted when making decisions regarding the need for additional legislated controls on sulfur emissions.¹⁸

Over the long term SO₂ emissions should continue to decline without additional legislative standards as older plants are retired and new and/or repowered units are brought on line. Finally, deployment of Clean Coal Technologies will contribute significantly to an accelerated reduction in SO₂ emissions and should be factored more heavily into future emission projections much as reflected in EPA's low base case forecast which shows a sharp reduction in emissions from power plants after 2005.

¹⁸ The EPA revised, biennial base case emissions forecast is one such forecast. The new edition of this forecast does correspond more closely with NCA estimates than earlier forecasts, as the EPA estimates now (unlike past reports) incorporate the decline in emissions that occurred between 1980 and 1985 and recognize that, in the future, emissions levels will be affected by changes in state implementation plans and by limited repowering with clean coal technologies. Experience will prove that even these modified forecasts are still unrealistically high and overstate the emissions level that will be achieved, even in the absence of acid deposition control legislation.

For example, in 1995 the base case forecast shows that SO₂ emissions will be approximately 16.2 - 16.8 million tons from coal fired utilities, a forecast increase of 1.4 - 2 million tons higher than 1987 levels. This forecast is based on an approximate 780 - 810 million ton coal burn in 1995, and increase in consumption of 62 to 92 million tons above 1987 utility coal use. An increase in tons emitted of the magnitude forecast would require that each ton burned in 1995 in excess of the amount used in 1987 would have to emit at an approximate 2.00 lb.SO₂/MMBTU rate, somewhat higher than the average today. This is highly unlikely. Most new coal burn will occur at rates that are well below those that would be necessary to increase SO₂ emissions to the levels forecast.

~~NATIONAL COAL ASSOCIATION~~

ATTACHMENT A
TO ACCOMPANY STATEMENT OF

RICHARD L. LAWSON
PRESIDENT
NATIONAL COAL ASSOCIATION

HEARING ON
THE RE-AUTHORIZATION OF THE CLEAN AIR ACT

before the
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

OCTOBER 3, 1989

EMISSION ESTIMATES FOR THE NON-UTILITY SECTOR

	<u>SO₂ Emissions</u> (000 short tons)			
	<u>1980</u>	<u>1985</u>	<u>1995</u>	<u>2000</u>
Industrial Combustion	3,606	2,446	2,150	2,130
Other Combustion	1,153	580	510	450
Industrial Processes	3,473	2,907	2,642	2,627
Transportation	879	864	464	464
Other	<u>365</u>	<u>39</u>	<u>39</u>	<u>39</u>
	9,476	6,836	5,805	5,711

Note: 1980 and 1985 emissions are from NAPAP inventories.

The forecasts of energy consumption by sector used in this analysis are from the Energy Information Administration's latest long-range forecast.

INDUSTRIAL COMBUSTION
OTHER COMBUSTION

Industrial combustion emissions should decline between 1985 and 2000 for several reasons: (1) the new NSPS standards for industrial boilers will require any new fuel sources to achieve 90% removal (2) gas and oil prices are now forecast to be lower relative to coal prices, leading to the use of more gas and oil and less coal (3) while oil is forecast to increase as an industrial fuel, use of residual fuel oil, which is the high sulfur oil, is now forecast to decline steadily (4) the forecast for non-utility generation sales to utilities has more than doubled over the forecast of three years ago, and most of the new generation is expected to be from new IPPs which must meet NSPS requirements and (5) all of the increase in industrial coal use is all in the non-utility generation sector, and there will be a decline in the traditional markets for industrial coal.

Industrial coal use in traditional markets will fall from 70 million tons in 1985 to 65 million tons in 2000 according to EIA's forecast. NUG coal consumption will increase to 18 million tons. Combining the drop in traditional coal consumption with a slight continuation of the trend of improving emissions per ton of coal burned, and adding emissions from the NUG sources at NSPS rates leads to the forecast improvement in emissions. The impact of the decline in residual oil emissions is also included, although this is a much smaller factor. (This forecast for emissions from industrial boilers does not include any attempt at estimating the effects of the President's bill.)

Other combustion sources includes both commercial and residential fuel consumption. Coal use in the residential/commercial sector is forecast to decline from 8 million tons in 1985 to 7 million tons in 1995 and 6 million tons in 2000. Both the overall consumption of oil and the consumption of residual fuel oil are forecast to decline through the year 2000, as gas and most notably, electricity become the major fuels in this sector. The forecast is simply an estimate of the effect of these trends.

INDUSTRIAL PROCESSES

Four of the largest sources of industrial process emissions are copper smelting, petroleum refineries, cement production and iron and steel production. Emissions for these four categories were forecast separately, and emissions from the combination of all the smaller, remaining categories were assumed to remain at the 1985 level overall.

	<u>SO₂ Emissions</u> (000 short tons)			
	<u>1980</u>	<u>1985</u>	<u>1995</u>	<u>2000</u>
Industrial Processes:				
Copper Smelting	1,099	637	400	400
Petroleum Refineries	623	488	488	488
Cement Production	346	113	95	85
Iron and Steel	193	145	135	130
Other	<u>1,212</u>	<u>1,524</u>	<u>1,524</u>	<u>1,524</u>
TOTAL	3,473	2,907	2,642	2,627

Note: 1980 and 1985 emissions are from NAPAP inventory.

Copper smelting is the largest component of industrial processes emissions. The copper industries continues the modernization and rationalization process because of the high environmental and energy costs. Several smelters closed because it was too expensive to comply with environmental regulations. In 1980 there were 16 smelters with production capacity of 1.9 million metric tons. In 1985 there were 11 smelters with production capacity of 1.4 million metric tons, and in 1987 there were 9 smelters with 1.2 million metric tons of capacity.

The type of capacity has also been changing. In 1980 there was 958,000 metric tons of reverberatory furnace capacity, compared with 386,000 metric tons in 1987. These furnaces have closed or replaced by flash smelters. Reverberatory furnaces produce a weak concentration of sulfuric acid which is difficult to capture with sulfuric acid plants whereas flash furnaces produce a stream with a higher concentration of sulfuric acid. The flash furnace technology can control 99+ percent of potential emissions. Since 1987 one more reverberatory furnace has been retrofitted with a flash furnace.

According to DOC's 1989 U.S. Industrial Outlook, several copper producers are investing in solvent extraction-electrowinning (SX-EW) plants which is a technology that produces copper by leaching the metal from low-grade copper waste or oxide ore. The capital costs of SX-EW are roughly one-half those of the conventional copper smelting process while environmental costs are extremely low. It is expected that this process will increase its share of production.

Copper consumption is expected to continue its slow rate of increase. The combination of low growth in consumption, inroads by the SX-EW process and improved environmental performance of the smelter industry should lead to a decline in emissions from copper smelting.

Petroleum refineries have decreased their emissions between 1980 and 1985. The EIA forecast predicts fairly slow growth in demand for refined petroleum products, and an increase in imports of refined petroleum products. OPEC countries have been pursuing downstream integration which would account for the forecast of increased imports.

(million barrels per day)

	1980	1985	1987	2000
Imports of Refined Petroleum Products	1.65	1.87	2.00	2.54
Refined Petroleum Products Supplied	17.06	15.72	16.67	18.61

Source: Energy Information Administration, Annual Energy Outlook 1989.

EIA's forecasts of imports for 1988 and 1989 are much lower than the actual experience, while its forecasts for supply are right on target, indicating that the potential growth in imports may be underestimated. Refined petroleum products are being imported at an average of 2.37 million barrels per day through May of 1989. (Monthly Energy Review estimate.) The rise in imported refinery products could result in even slower growth in domestic refinery products.

The domestic refining industry has had to adjust to changes in type of product demanded, and to new environmental restrictions; these factors are expected to continue to affect the operations of the refining industry. The combination of slow growth in demand for refined petroleum products, increasing imports and a continuation of the improvement seen in emission rates leads to the forecast of no growth in emissions in the petroleum refining sector.

Cement production has grown very slowly throughout the 1980s, while imports have increased dramatically. Cement demand and imports are both projected to continue to grow, although imports will not grow as fast as demand (DOC). U.S. producers continue to shut down less efficient plants because of competition from low-cost imports and the current world overcapacity of cement. New technological developments are concentrated on energy efficiency. Coal consumption by the cement industry has been declining slowly since 1985 even though cement production has increased. EIA's forecast does not go into detail about the industrial sector, but NCA's

forecast predicts a continuation in the decline in coal consumption by about 2 million tons between 1987 and 2000. Thus a small decline in emissions is likely.

Industrial processes includes coal consumption in coking ovens. Metallurgical coal consumption declined from 67 million tons in 1980 to 41 million tons in 1985. The trend is expected to continue, with coal consumption falling to 37 million tons in 1995 and 36 million tons in 2000.

TRANSPORTATION

The forecast of emissions reduction in the transportation sector is based on the proposed reduction to .05 of sulfur in diesel fuel. This reduction is included in the President's bill, and also is being proposed by EPA for enactment by 1993.

~~NATIONAL COAL ASSOCIATION~~

BACKGROUND
FOR CHARTS
INCLUDED IN
STATEMENT OF

RICHARD L. LAWSON
PRESIDENT
NATIONAL COAL ASSOCIATION

HEARING ON
THE RE-AUTHORIZATION OF THE CLEAN AIR ACT

before the
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

OCTOBER 3, 1989

TO ACCOMPANY CHART 3

RELATIVE CONVERSION EFFICIENCIES FROM COAL-FIRED FACILITIES

<u>Technology</u>	<u>Fuel</u>	<u>Conversion Efficiency (approx.)</u>	<u>% Change In Conversion Efficiency¹</u>
Conventional Pulverized Coal (w/FGD)	Coal	30-33%	--
Conventional Combustion w/Advanced Flue Gas Cleaning	Coal	35%	+6.1%
Conventional Pulverized Coal (w/o FGD)	Coal	36%	+9.1%
Advanced Cleaning	Coal	36%	+9.1%
Atmospheric Fluidized Bed Combustion	Coal	36%	+9.1%
Pressurized Fluidized Bed Combustion	Coal	40%	+21.2%
Integrated Gasification Combined Cycle (IGCC)	Coal	42%	+27.3%
IGCC w/Fuel Cell	Coal	50%	+51.5%
MHD	Coal	55%	+66.7%

1. Using Conventional Pulverized Coal with FGD as a base, 33% efficiency.

Assumptions: 2.8% sulfur coal, 11,600 BTU/lb
 65% Capacity Factor
 Nominal 500 MWe Electric Power Plant
 90% sulfur removal (where required)

TO ACCOMPANY CHART 4

Range of Estimated Commercial Availability
Dates of Clean Coal Technologies
(assume implementation of a clean coal deployment program)

Technology Class	available for Commercial Order ¹ (Range of Estimates)	Potential Widespread Commercial Use to Achieve Reductions of Air Pollutants ²
Advanced Physical Coal Cleaning	1994-1996	2000-2005
Chemical Coal Cleaning	1998-2000	2010-2015
Low Grade Coal Upgrading	1993-1995	1990's-2000
Advanced and Regenerable FGD	1995-1998	2005-2010
Furnace Sorbent Injection	1993-1995	2000-2005
Duct Sorbent Injection	1994-1996	2000-2005
NO _x Control During Combustion	1996-1998	2005-2010
NO _x Control Post Combustion	1996-1998	2005-2010
Integrated Gasification Combined Cycle	1996-1998	2005-2010
Utility-Scale Atmospheric Fluidized Bed	1994-1996	2000-2005
Pressurized Fluidized Bed	1998-2000	2005-2010

1. These dates assume that the ongoing clean coal technology demonstration program continues; that a deployment program providing for several subsequent commercial-scale demonstrations of the same or similar technology will be fully implemented (number of deployment projects will vary by technology); that neither the demonstration nor deployment projects will fail; and, that deployment projects of the same generic technology will be initiated roughly in parallel and not in sequence to accelerate further the development schedule, (though the sequential approach would save dollars and permit maximum learning value from the prior projects). A successful deployment program is intended to provide sufficient operating experience with a given technology to establish technical feasibility, economic competitiveness with other commercially-available options, and qualified suppliers capable of guaranteeing the technology's performance.
2. These dates assume that industry will not be precluded from using the technology once it has been successfully demonstrated and deployed. To make a significant contribution to the reduction of atmospheric pollutants, the clean coal technologies must penetrate the market. Depending upon the degree of difficulty, size and complexity of each clean coal project or application, each commercial clean coal project will require 2 to 3 years from start date to placed-in-service date for simple engineering modifications and 5 to 7 years for projects requiring major equipment installation. Initially, to minimize risk, a utility will apply a retrofit or repowering technology to one or two units and not to the entire system. Once that utility gains experience and confidence in the technology it will likely be applied to other units in that utility's system. Each utility is likely to proceed in this same manner depending upon its individual, and unique, circumstances. Further, utilities will not all proceed to use such technologies at the same time. Therefore, significant market penetration which, in turn, will likely yield a significant contribution to the reduction of air pollutants, will take time and a decade beyond the date of commercial readiness is not an unreasonable estimate. Forcing use of the technologies through requirements for

early reductions will only lead to abandonment of the newer technologies in favor of currently available technology, for example, wet-limestone scrubbers.

3. Several equipment suppliers and manufacturers are currently prepared to offer, with performance guarantees, gasification units or atmospheric fluidized bed boiler units. However, these units, while large enough for some utility applications, are generally considered to be too small for widespread utility use and/or do not demonstrate the integration of multiple equipment trains. The estimated availability dates cited in the chart assume that the technology will have been demonstrated and deployed, by those dates, at a size large enough (greater than 400 megawatts) to be suitable for widespread utility-scale use.

WRITTEN TESTIMONY OF

THE CLEAN COAL TECHNOLOGY COALITION

SUBMITTED TO

THE SENATE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

OCTOBER 3, 1989

I. INTRODUCTION:

A. About the Clean Coal Technology Coalition.

This written testimony is submitted by the Clean Coal Technology Coalition, an ad hoc group of electric utilities, equipments suppliers, coal companies, architect-engineering and construction firms, eight state governments, several universities, the National Coal Association, the Edison Electric Institute and the American Mining Congress. The Coalition, which has a total membership of 87 organizations, was organized in early 1985 for the specific purpose of encouraging the demonstration, deployment and widespread use of clean coal technologies. A listing of the Coalition's members is provided as Attachment 1 to this statement.

This is the first time that the Coalition has appeared before the Subcommittee on Environmental Protection to discuss the impact of proposed acid rain control legislation on the development and use of clean coal technologies. The opportunity to discuss this relationship is appreciated.

B. Conclusions Reached in this Written Statement.

Mandatory emissions reductions by a time certain, as presently contemplated by President Bush's clean air plan and by legislation introduced by Senators Baucus and Mitchell, will adversely impact the development of many clean coal technologies. These new technologies are not yet an available and accepted commercial option by which such reductions might be achieved. And, unless provisions are included in clean air legislation to accommodate the current state of development of these technologies and to allow for their demonstration and early use in full-scale commercial settings, it is likely that many will be significantly delayed or even cancelled.

If clean coal technologies are worthy of continued government efforts to ensure accelerated development -- as the Coalition believes they are -- then acid rain legislation must permit the time necessary for demonstration and introduction of the technologies into the marketplace. The legislation must also include risk-reducing incentives to compensate for and to encourage the early utilization of such technologies. (The need for time must necessarily include forbearance in the application of regulatory mandates included in the legislation.)

C. Specific Issues Addressed in this Testimony.

This written testimony is intended to address the following questions:

1. What are clean coal technologies?
2. Why are clean coal technologies important?
3. Will acid rain control legislation impede development of clean coal technologies?
4. How can such legislation be crafted to best ensure continued development and eventual use of these emerging technologies?

II. WHAT ARE CLEAN COAL TECHNOLOGIES?

Clean coal technology refers to a suite of emerging coal-based technologies that, if developed, offer significant potential for improvement over current means to generate energy or power from coal and to control or prevent emissions that result from using coal. These technologies are installed or utilized prior to the combustion of coal, during the combustion process, or after combustion has occurred. In addition, a number of the technologies actually convert the coal into another usable energy form such as a coal-derived gas or liquid. (See: Attachment 2 for a general description of clean coal technologies.) *

Clean coal technologies are also grouped into two categories depending upon their purpose: (1) retrofit technologies, which can be used on existing plants to reduce emissions, and (2) repowering technologies that replace a significant portion of the original plant and often increase capacity while reducing emissions.

Typically, retrofit technologies do not achieve 90% sulfur emission reductions (unless used in combination with each other). However, such technologies do offer a means of reducing emissions by 50-70% at costs projected to be significantly less than installing conventional scrubbers. Also, a number of these technologies are capable of simultaneously controlling NOx emissions. Retrofit technologies are important as an alternative to more costly scrubbers and, if commercialized in time, could provide significant cost-saving advantages when relied upon to meet the requirements of acid rain control legislation.

*Attachments to this statement have been retained in committee files.

Repowering technologies are a means of pollution control which meet or exceed current Clean Air Act requirements. In addition, these technologies can be used in new facilities or installed on existing power plants to increase the capacity of those plants. Installation at existing plants might result in increasing the electricity output of the plant by 15% to 150% while avoiding siting issues and other impediments associated with new power plant construction. (See: Attachment 3 for a listing of retrofit and repowering technologies.)

III. WHY ARE CLEAN COAL TECHNOLOGIES IMPORTANT?

The importance of encouraging the development of clean coal technologies is three-fold:

- First: Clean coal technologies offer a means by which to control emissions from the use of coal in an efficient and cost-effective manner;
- Second: Clean coal technologies will enable utilities and others to continue to use coal to meet growing energy requirements in the 1990's and beyond.
- Third: Clean coal technologies will be used by other countries to meet their growing energy requirements; successful development in the U.S. will mean significant new markets for export of American technology and know-how.

A. Effective Control of Emissions:

The utility industry is faced with two realities about the technologies currently available to use coal and to control air emissions from the use of coal.

First, conventional pulverized coal units are the only available technology commercially proven for the generation of large amounts of electricity from coal. Because pulverized coal units depend upon economies of scale, they are relatively large units requiring long construction periods and large capital investments. This technology is near the end of its development potential.

Second, the utility industry has available only three conventional options to control SO₂ emissions from coal use -- coal cleaning, conventional scrubbers and coal switching.

Each of these methods for controlling coal-derived air pollutants has disadvantages. For example, conventional coal cleaning has only a limited ability to remove sulfur, typically only 10 to 30 percent of the total sulfur in coal. Conventional

scrubbers are costly and can only be retrofitted to an existing unit if sufficient space at the power plant site is available. In addition, conventional scrubbers use a portion of the electricity produced in the power plant to operate, thus lowering efficiency. Also, the typical flue gas desulfurization system today produces a wet waste product that causes its own environmental impact. Coal switching could become costly if a significant shift to low sulfur coal occurs and the demand for such coal exceeds the supply. Use of lower sulfur coal in units originally designed for higher sulfur coals can also result in boiler derating whereby output is lowered, due to coal characteristics which do not meet or are in conflict with the design specifications of a particular boiler. Also, unless designed for low sulfur coal use, the operation of electrostatic precipitators could be adversely affected and could create problems of particulate compliance.

The limitations of current means to control air pollutants are aggravated by the wide diversity of the nation's utility boiler population in terms of boiler designs, ages, sizes and configurations, as well as the type of coal consumed.

In the face of these realities, the electric utility industry must change its technological base for electricity generation derived from coal. New power generation options are required which can --

- o meet increasingly-stringent siting and environmental standards without sacrificing productivity;
- o be rapidly constructed in modular fashion while retaining acceptable economies over a wide range of unit sizes to better match uncertain demand growth; and,
- o utilize a variety of coals in a single design.

Most important, coal utilization must be made compatible with environmental protection. This means that emissions reduction and cost-effective electricity generation must be achieved concurrently and not pitted one against the other. Clean coal technologies are the key to that compatibility. Successful development and use of emerging clean coal technologies can provide a win for ratepayers by moderating increases in electric rates and also a win for the environment.

From the standpoint of cost effectiveness and ability to control emissions, clean coal technologies promise to be far superior to currently available methods of control. Figure 1

compares the costs and effectiveness of emissions control of the various conventional and new technologies. (See also: Attachment 4 which compares the cost and efficiency of various technologies now under development.)

Cost-effectiveness of Clean Coal Options Versus Existing Technology

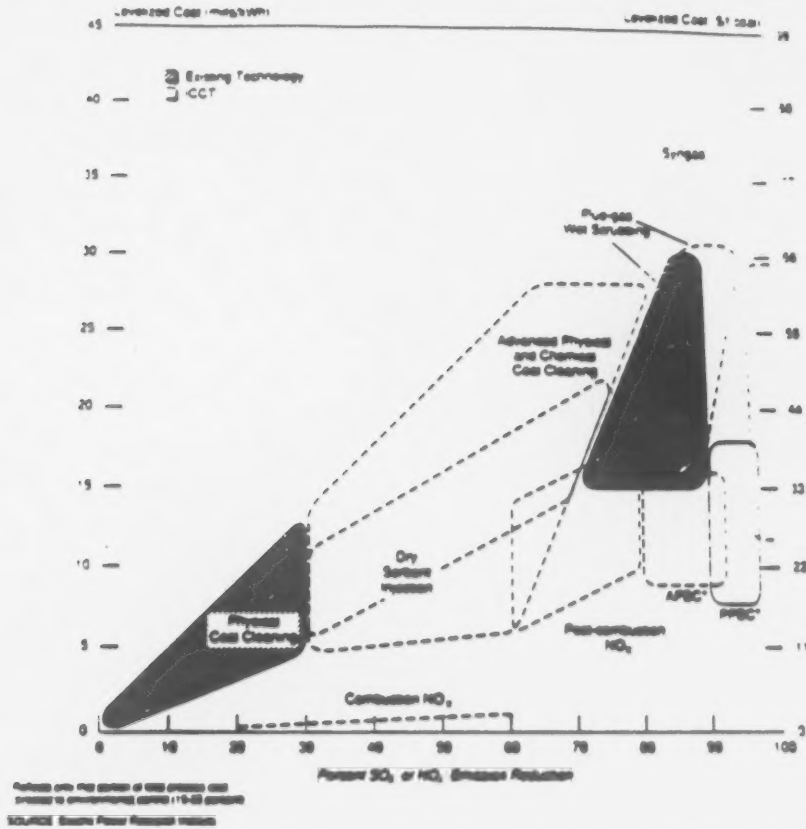


Figure 1

Source: National Coal Council Report, November 1988

Among the many technical and cost advantages of clean coal technologies are the following:

- o reduction of sulfur dioxide (SO₂) emissions in a more cost effective manner than currently-available technology;
- o simultaneous reduction in some cases of both SO₂ and NO_x emissions (conventional scrubbers only reduce SO₂ emissions);
- o attainment of required environmental control at lower capital and operating and maintenance costs than current technology;
- o utilization of the widest range of coals, from low to high sulfur coals;
- o modularity in some cases, which means units can be sized more closely to match load growth and can take advantage of the economies of shop assembly and pre-fabrications, thereby shortening construction time and cost;
- o cost savings of 10 to 20 percent depending upon plant-size for new applications when compared to conventional generation technology;
- o use of existing plants and plant sites in retrofit and repowering applications, thereby avoiding premature plant retirements or replacement with other fuels;
- o projected savings of 10 to 30 percent over conventional technologies when retrofitting existing facilities with clean coal retrofit technologies; and
- o increased efficiency in coal use which decreases emissions of CO₂, a greenhouse gas.

Furthermore, success in the development of these technologies may preserve American mining jobs, will better ensure U.S. industrial competitiveness, and could expand the trade of American coal and technological know-how (without

substantial efforts to encourage accelerated development, these technologies will be imported for use and the U.S. will lose its current lead in this field of technology development).

B. Coal is Needed to Meet Growing Energy Demand:

Coal currently supplies the fuel for more than one-half of the electricity generated in this country. Coal-burning power plants (including lignite) account for 43.4% of total operable capacity (as of year-end 1987) and nearly 56% of actual power generated.

Estimates vary as to the amount of new and replacement capacity that will be needed in the 1990's and beyond to power a growing economy. Estimates of electricity growth provided by the Electric Power Research Institute (EPRI) and depicted in Figure 2, indicate a need for as much as 140,000 megawatts of new capacity and 100,000 megawatts of replacement capacity or life extension by the year 2000.

U.S. GENERATING CAPACITY GROWTH

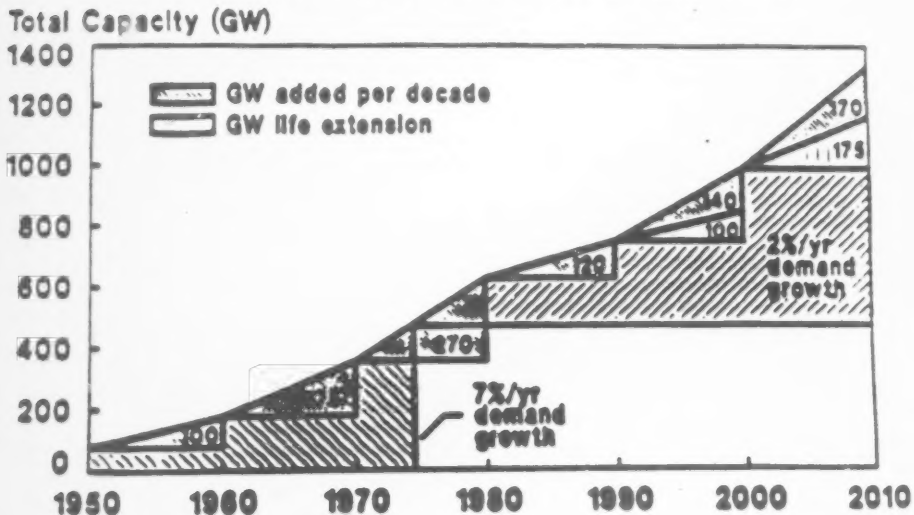


Figure 2

SOURCE: EPRI

The Energy Information Administration's (EIA) 1989 Annual Outlook for U.S. Electric Power, appears to corroborate these estimates by projecting the need for 110 gigawatts of utility capacity additions and 28 gigawatts of non-utility capacity additions by the year 2000. Fifty gigawatts of this new capacity, according to the EIA report, are expected to be fueled by coal.

In the context of revising the Clean Air Act, consideration should be given to the role of coal in meeting our nation's energy requirements.* It is vitally important to understand that energy supply and our nation's economic security are closely tied to the use of our most abundant and secure fossil fuel resource -- coal. Thus, given the promise of clean coal technologies, any control legislation should include provisions to encourage the development of these technologies, thereby better assuring a role for coal in meeting our energy needs.

C. Potential of Clean Coal Technology Exports:

The National Coal Council, in its recent report entitled Innovative Clean Coal Technology Deployment (November 1988), estimated that the United States could become a dominant player in a world-wide clean coal technology market valued at \$50 billion per year by 2000 and \$70 billion per year by 2010.

The U.S. has historically been the world leader in coal technology. The majority of coal-fired power plants in the free world and in the developing countries have relied on technology supplied by, or licensed from, U.S. manufacturers. However, this technical leadership is increasingly challenged. The Japanese are the world leaders in the development of both combustion and post-combustion NOx control technology. The Europeans are leaders in fluidized bed technology. In other words, if our energy and environmental policies lose focus on the strategic importance of coal and the technologies for its use we also risk losing international markets potentially worth billions of dollars in trade. We may even risk the loss of domestic markets to foreign manufacturers who are rapidly gaining superiority and leadership in the development of many clean coal technologies.

*America's recoverable coal reserves, which the National Coal Association places at 250 billion tons, are sufficient -- at even double today's rates of production -- to last this century, the next century and a significant portion of the century to follow.

IV. WILL ACID RAIN CONTROL LEGISLATION IMPEDE DEVELOPMENT OF THESE TECHNOLOGIES?

Proposed emissions control legislation which requires reductions by certain dates will impede the use of new technologies unless such technologies are available and commercially proven in time to plan for and then to meet the compliance deadlines.

Only after successful demonstration and deployment will a particular clean coal technology be considered an option for achieving reductions of atmospheric pollutants; even then, successful demonstration and deployment does not mean that the technology will be immediately and widely incorporated into the nation's electric generation base thereby achieving significant reductions. The utility industry -- each utility -- will proceed very carefully when applying a new technology. This means that for any given utility, a successfully-demonstrated clean coal technology will be applied first to one unit and then another before being incorporated into an entire system. This market penetration scenario will be replicated many times over throughout the entire utility industry.

footnote cont'd:

Contrast this accounting of domestic coal resources to a recent U.S. Geological Survey review of its estimates of American oil and gas reserves. It was concluded that we have 11 years of undiscovered oil left at today's rates of production and 14 years of natural gas.

Finally, it is worth noting that our dependence on imported energy is increasing. The use of imported energy, which supplied 21.3 percent of U.S. energy use in 1988, is expected to grow at a very rapid annual rate of 4.0 percent between 1988 and the end of this century. Imported energy will provide almost 30 percent of the total energy used in the United States in 2000. Net petroleum imports are expected to increase from an average 6.3 million barrels per day to 10.2 million barrels per day by 2000. This would account for 55 percent of all petroleum used in the U.S. in 2000 and 24.3 percent of total energy used in that year. (Source: 1989 Annual Energy Outlook, Long Term Projections, Energy Information Administration, Department of Energy, January, 1989.) At these rates of consumption, by 1995 the United States might be spending \$80 billion a year on imported oil. This is \$52 billion above the \$28 billion we spent on imported oil in 1986. That out-flow of U.S. dollars is a principal reason for an unfavorable balance of trade. The Department of Energy's (DOE) 1987 report to the President on Energy Security also reported that by 1995, the volatile Middle East producers and OPEC will control as much as 60 percent of the world market for oil.

After achieving commercial maturity, introduction of clean coal technologies into the entire generation base could easily take a decade or more. Among those factors which will govern the time necessary for introduction are: time to evaluate the technology's performance and to decide to use it on additional units; time to site such projects; time to complete permitting and regulatory approvals, including approvals by utility rate regulatory agencies; and, time to place orders and receive equipment from manufacturers of the clean coal technology.

The time required to insure commercial maturity and to achieve introduction and widespread use must be considered if the Congress chooses to impose stricter emission requirements while also continuing policies and programs designed to encourage clean coal technologies. This requirement for sufficient amounts of time, of course, does not mean that clean coal technologies should be exempt from existing local, state or federal requirements intended to protect the environment.

Attached to this statement (see: Attachment 5) is an estimate by the Coalition as to when the various clean coal technologies may be ready for commercial use. In particular, it should be noted that industry will require much of the 1990's to demonstrate, deploy and bring to commercial readiness clean coal technologies. These estimated dates do not factor in the disincentives to demonstrating new technologies if industry must also plan and execute programs to meet reduction requirements at the same time.

Unless time and flexibility in compliance are provided in control legislation, a utility will probably comply with mandated reduction requirements by switching fuel sources, shutting down power plants prematurely or retrofitting conventional scrubbers. Emerging clean coal technologies, given current levels of development and associated risks, will be a very limited option.**

**With respect to the use of clean coal technologies as a compliance option, important factors to be considered by utility management include: availability and reliability of the technology; performance characteristics with respect to percentage of SO₂ and/or NO_x removal capability; costs; and proven reliability. Again, utility management will very carefully weigh the risks of using a clean coal technology.

Not only will clean coal technologies be of limited use in meeting reduction requirements, but also the on-going clean coal technology demonstration program to which Congress will have appropriated more than \$2.5 billion may be jeopardized. It is doubtful that industry would use limited resources to cost-share in the demonstration of new technologies when faced concurrently with requirements for massive emission reductions. (Participants in the on-going DOE clean coal program are required to provide at least fifty percent of the costs of a clean coal demonstration.) If these demonstrations are delayed or not conducted, then clean coal technologies are not likely to become a preferred option of industry and the use of coal will be further jeopardized.

V. HOW CAN ACID RAIN CONTROL LEGISLATION BE CRAFTED TO BEST ENSURE THE CONTINUED DEVELOPMENT AND WIDESPREAD USE OF CLEAN COAL TECHNOLOGIES?

While the Senate may consider any of a number of legislative proposals, these comments are directed at the legislative provisions included in S. 1490. (The Coalition will be pleased to comment on other proposals as may be requested by the Committee.

Included in Title V, the acid deposition control program, of S. 1490, are several provisions directed at clean coal technologies. These provisions include the following:

1. a three year extension of the Phase II reduction requirements, until December 31, 2003, for a limited number of "repowering" technologies and no requirement to obtain emission allocations for additional capacity generated from a repowered unit,
2. a Federal Energy Regulatory Commission initiated, five year demonstration program to provide certain, enumerated rate regulatory incentives for no more than four projects per class of clean coal technology, and

footnote cont'd:

Typically, utility managers must satisfactorily answer the following questions before investing in clean coal technology:

Will the technology work in commercial scale applications?

Will the technology be sufficiently reliable that management may count on the plant being available to meet service obligations to customers?

3. an exemption from certain environmental reviews for those clean coal technologies eligible for the repowering extension or those clean coal projects selected under the on-going DOE program or currently supported by the EPA.

The provisions of S. 1490 which specifically address clean coal technology development fall short in efforts to encourage the commercialization and widespread use of clean coal technologies.

First, the number of clean coal technologies which are eligible for the Phase II extension of time is unnecessarily limited (only so-called "repowering" technologies are eligible; "retrofit" clean coal technologies, whether precombustion or post combustion are not eligible).

Second, the FERC-related rate regulatory incentives are limited to a modest 5 year demonstration program in which only four projects in each clean coal technology class would be eligible for the regulatory incentives. Also, exemptions from certain existing environmental requirements apply only to clean coal projects that qualify for the extension for repowered sources or that have been selected under on-going demonstration programs. Such exemptions will not apply to those clean coal projects, including those that would use clean coal retrofit technologies, that may be undertaken by industry on its own without government support.

Third, the proposal fails to provide needed flexibility for the user of a new clean coal technology by not recognizing that early commercial use of a clean coal technology could involve very significant risks, that is, the technology might not operate as planned. Such risk-taking may not be prudent especially where the technology must be relied upon to meet mandatory emission reductions by specific dates.

footnote cont'd:

Will the investment be recoverable?

Are there affirmative reasons (e.g., greater efficiency, reliability, environmental performance) to justify the time and money required for project development?

Will changes in environmental regulation render the investment wasted and further jeopardize its recovery?

Fourth, other general requirements of S. 1490 will not accommodate the use of clean coal technologies. Specifically, the legislation requires the following:

1. a utility is required to submit a permit application and compliance plan by January 1, 1995. This plan must be submitted long before adequate engineering data will be available upon which industry might judge whether a clean coal technology would be the best means by which to comply with the Phase II emission reduction requirements; and
2. a utility intending to utilize a repowering technology must provide to the EPA Administrator, by December 31, 2000, documentation of preliminary design and engineering as well as executed (signed) contracts for repowering equipment. These significant contract-related expenditures and risks must be incurred before the Administrator is required to approve or disapprove such actions. If the contracts are not approved, then the liabilities attendant with signed, but disapproved, contracts could be so significant as to dissuade the use of repowering technologies.

Fifth, the legislation does not provide industry with a sufficient amount of time during which to demonstrate, deploy and make available for widespread commercial use the suite of technologies now being developed under the DOE's five year and \$5.0 billion clean coal program.

President Bush and Members of Congress have expressed strong support for the continued development of clean coal technologies and indicated their intent to ensure that these technologies remain an integral part of any clean air plan. To ensure that a wide array of these new technologies are developed and widely used, S. 1490 -- or whatever legislation the Committee considers -- should be designed to accommodate the following clean coal objectives:

- first: to support and encourage ALL clean coal technologies not just designated "repowering" technologies;
- second: to acquire adequate engineering data so that industry and utility regulatory commissions will then have confidence that the technologies will meet commercial needs (such data can only be obtained through the replication of successfully demonstrated technologies in a limited number of commercial applications and by giving industry a sufficient amount of time during which to gain that confidence);

- third: to encourage the accelerated commercialization of those clean coal technologies which by means of lowered capital and operating costs -- when compared to currently available means of reducing emissions -- will moderate rate impacts on electric consumers and, in turn, benefit the economy and U.S. competitiveness; and
- fourth: to enhance U.S. energy security by continuing and increasing the use of all domestic coal resources in a manner that is consistent with national environmental goals.

To best assure the continued development of clean coal technologies S.1490 should be amended as follows:

1. The definition of "clean coal technology" found in section 515 (a) of S.1490 should be adopted in section 508 (a) for purposes of determining the suite of technologies eligible for the Phase II extension (section 508 (b)), emission control requirements (section 508 (c)) and allowances (section 508 (d)). To achieve an objective of encouraging significant emission reductions from clean coal technologies (CCT's) it may be necessary to set an emission standard, i.e. NSPS, that must be achievable by the eligible CCT's and, alone or in combination with other control strategies, the named CCT must achieve that standard in order to receive the benefits provided in section 508. In addition, any eligible CCT which replaces a fossil-fuel fired boiler, not a "pulverized coal boiler" as now stated in the bill at section 502 (10) should be eligible for the section 508 incentives.
2. Any clean coal technology project which has received government funding pursuant to the DOE clean coal technology demonstration program, any EPA-supported clean coal project or any designated clean coal technology eligible for the incentives provided in section 508 should be eligible for the section 515 (b) rate-related FERC incentives.
3. The legislation must include provisions that grant greater flexibility in achieving required emission reductions where it is intended that a clean coal technology will be used. To achieve this flexibility the following changes should be made:
 - a. Where a user chooses to install a designated clean coal technology as provided in section 508 that user should be afforded the choice of replacing

the existing capacity with a new clean coal, "greenfield" facility instead of incorporating the clean coal technology into that existing unit.

- b. Where a utility chooses to install a designated clean coal technology as provided in section 508 but it is subsequently determined by the EPA and the user that the clean coal technology will not be feasible, then the user should be permitted an extension of time in order to comply with Phase II requirements by whatever acceptable means are then available.
 - c. By December 31, 1992, the DOE, in consultation with the EPA, shall publish a list of clean coal technologies that will be eligible for the Phase II extension. Subsequent identification of a designated clean coal technology in a compliance plan (section 507 (b)) will constitute a pre-approval of that technology for purposes of any permits that may be required under the provisions of S.1490.
4. Where a user utilizes a designated clean coal technology as provided in section 508, to comply with the requirements of Phase II, the compliance date should be extended to the year 2005.

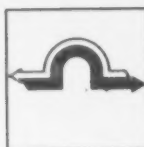
The purpose of these suggested changes is to ensure that the U.S. receives the full environmental and energy-related benefits of the on-going multi-billion dollar clean coal technology demonstration program. This can be achieved if --

- o the incentives now contained in the legislation are made available to ALL clean coal technologies now being developed thereby enabling industry to make the most cost-effective choices from the full suite of developing CCT's
- o industry is given FLEXIBILITY in using a CCT to meet emission requirements and is provided assurance that, if a clean coal technology is utilized, avenues of relief will be available to obtain time to assure the reliable operation of the CCT, or to comply by other methods of emissions control if the technology fails completely.

VI. CONCLUSION:

Environmental policy that recognizes the importance of clean coal technologies to our electric energy production capacity is sound public policy: sound environmental policy and sound energy

policy. Our national energy and environmental goals are mutually and best-served by an acid rain program that (in addition to mandating emissions reductions) seeks to facilitate, encourage and promote the use of clean coal technologies in meeting the required reductions. The members of the Coalition firmly believe that the set of amendments outlined and explained above are necessary to assure that an acid rain control program, like the one proposed in S. 1490, does not cripple the development of these important clean coal technologies.



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TESTIMONY OF ROY ALPER

INDEPENDENT POWER CORPORATION

RETIREMENT OF AGING POWER PLANTS
AS PART OF THE SOLUTION TO ACID RAIN
AND OTHER AIR QUALITY PROBLEMS

before the

UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

Washington, D.C.

October 3, 1989

Thank you, Mr. Chairman and members of the Committee, for the opportunity to testify before you today. Together you are grappling with one of the most challenging problems facing our country today -- how to clean up the air without crippling economic consequences. In the few minutes I have before you, I hope to offer some ideas that you will find useful in achieving this grand objective from which all of us should benefit.

I have read the same reports that you have claiming that reducing air emissions from electric utilities will either increase electric rates significantly or create massive dislocation in the high sulfur coal industry, or both. The reasons, of course, are the need for costly scrubber retrofits or fuel switching -- the two compliance strategies that most of the utilities have studied. I would like to offer you a different perspective on the situation.

There is a third arrow in the quiver of the utilities that few have discussed. Of the roughly 100,000 MW of generating capacity that would be affected by S. 1490/H.R. 3030, about 22,000 MW are aging. These units would, in the normal course of events, be considered for retirement during the 1990s as they reach 40 - 45 years of age. Yet nowhere in the debate on acid rain legislation have I seen any analysis on the contribution that retiring these units could make toward solving the problem. Instead, the cost for scrubber retrofits or fuel switching at these units is simply rolled into the estimated compliance cost as if these plants are expected to have infinite lives. In reality, they have



finite lives, just as did the 1952 Buicks and DC-6s that were built in the same era as these power plants.

Focusing on the sixteen states with power plants affected by the Administration's proposed legislation, the aging units above produce 26% of the problem SO_x emissions. In the five states with the greatest concentration of aging units that would not comply with the Administration's proposal, 38% of the targeted emissions come from aging units.

Table 1 shows these five states, New York, Ohio, Indiana, Tennessee, and West Virginia, and the contribution of their aging units to targeted SO_x emissions. Four of these five states, not including New York, are in the top five states that the Edison Electric Institute recently said would suffer the greatest rate impact from the proposed legislation.

Even more specific is the list of six aging power plants in Table 2. These aging plants are the source of nearly 11% of the SO_x emissions that would be affected by the proposed legislation. Two of the units on this table, noted with asterisks, are jointly owned power suppliers to federal nuclear energy facilities.

Clearly, the retirement of these aging units and replacement with cleaner and more efficient new technology offers a unique opportunity to reduce air emissions while avoiding costly retrofits or fuel switching that is harmful to local economies. These units need to be



replaced soon anyway. Keeping them in the equation simply exaggerates the apparent cost of emissions reduction programs and serves no discernable interest. Replacing these units with state-of-the-art technologies will significantly reduce air emissions. At the same time it would reduce the cost and increase the flexibility available to clean up newer units.

My company has completed an analysis of the advantages of this strategy in Southern California, an area struggling with NOx rather than SOx, and is now in the midst of an analysis of the possibilities with SOx. We used conventional ratemaking analyses and utility production simulation models; the assumptions were provided by California state agencies. We found that utility NOx emissions could be reduced by 65% by 1996 at no additional cost to ratepayers if 4,300 MW of aging units were replaced by commercially available, state-of-the-art technologies. This result was driven by two simple realities: current generating technologies are much cleaner and much more efficient than the technologies of the 1950s.

A copy of this study is attached for your information.* The study was sponsored by a group of companies who develop independent power projects using a full range of clean technologies.

*The study referred to has been retained in committee files.



Table 1

TOP FIVE STATES
PERCENT OF TARGETED SO_x EMISSIONS
FROM AGING UNITS

	<u>% Capacity Non-Complying</u>	<u>% Capacity Non-Complying and Aging</u>	<u>% Non-Complying Emissions from Aging Units</u>
New York	3	3	100
Tennessee	39	17	49
Ohio	68	21	38
Indiana	44	17	34
West Virginia	46	14	31
	—	—	—
Five States Avg.	37	13	38



Table 2

**SIX AGING POWER PLANTS
PRODUCE 11 PERCENT OF
TARGETED SO_x EMISSIONS**

<u>Plant</u>	<u>Units</u>	<u>State</u>
Joppa*	1-6	Illinois
Clifty Creek	1-6	Indiana
Muskingum River	1-4	Ohio
Kyger Creek*	1-5	Ohio
Gallatin	1-4	Tennessee
Kammer	1-3	West Virginia

* Primarily serves a Federal nuclear energy facility.



How does all of this relate to the proposed legislation? Among other things, there seems to be a need for caution in considering the estimates of compliance costs. I would also urge you to consider language that is structured so as to:

- o Not inadvertently discourage retirement of aging units
- o Encourage serious consideration by the states of the retirement of aging units
- o Give maximum flexibility to the states to determine how to deal with aging units
- o Specifically acknowledge that retirement and replacement with state-of-the-art technologies is an acceptable compliance strategy for the states to consider

Attached to my testimony are specific simple recommendations on each of these points. I and other consultants at Independent Power Corporation will be happy to work with members of your Committee and your staff as you consider what I hope is a fresh and helpful perspective on this challenging issue.



RECOMMENDED PRINCIPLES

1. Avoid inadvertently discouraging retirement of aging units

Traditionally, air pollution emissions are measured in terms of the weight of pollutant emitted per Btu burned, and this approach is used in most of the acid rain control bills. This encourages unit-specific changes to comply and discourages unit retirement since no credit is given for the retirement. It also discourages efficiency improvements since more pollutants can be emitted if more fuel is burned.

Recent rules adopted by the South Coast Air Quality Management District (Los Angeles) measure compliance in terms of weight of pollutant emitted per megawatt hour generated on a utility system basis. This allows the utilities a wider range of options, including retirement and replacement, to comply with the rule. It encourages efficiency improvements at individual plants and throughout the system by measuring compliance on the basis of energy output rather than fuel input.

We would urge that the compliance standard in the legislation be stated in terms of weight of pollutant emitted per megawatt hour. We would be happy to work with the committee to develop precise language to this effect.



2. Encourage serious consideration by the states of retirements of aging units as a compliance strategy

Few states have looked closely at the aging utility systems subject to their jurisdiction. To our knowledge, no state other than California has considered retirement of aging units as a cost-effective compliance strategy. Federal legislation could bring the issue into focus by requiring each affected utility to submit a plan to its state regulatory authority, within one year of passage of the act, for the retirement, replacement, repowering, or life-extension of its aging units as part of compliance with the act.

3. Give maximum flexibility to the states

Each state has its own unique circumstances to address in terms of aging plants, rates, fuels, etc. and should be given maximum flexibility to develop an appropriate state-specific response to the legislation. Within the context of clear standards and clear compliance dates, the states will be well suited to fashion specific compliance strategies consistent with local needs.



4. Specifically acknowledge that retirement and replacement with state-of-the-art technologies are an acceptable compliance strategy

The conventional strategies of scrubber retrofits and fuel switching are so embedded in the vernacular that guidance from Congress is needed to assure that retirements and replacements are accepted as compliance strategies. Without such guidance, states may not feel that they have the ability to consider this option.



ATTACHMENT

Statement By
INDUSTRIAL GAS CLEANING INSTITUTE, INC.

Presented by

JEFFREY C. SMITH
Executive Director

Before The
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
of the
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

October 3, 1989

Industrial Gas Cleaning Institute, Inc.
1707 L Street, N.W., Suite 570
Washington, D.C. 20036
Telephone: 202-457-0911

Good afternoon. My name is Jeffrey Smith. I am Executive Director of the Industrial Gas Cleaning Institute, Inc. (IGCI).

IGCI is the national non-profit association of manufacturers of air pollution control equipment for industrial sources of air pollution. We appreciate the opportunity to be here today and congratulate the Subcommittee on its efforts to resolve the long-standing issue of controlling acid rain damage.

I.

IGCI members are involved with a variety of competing air pollution control products, including Clean Coal Technology (CCT) initiatives, particulate controls that will often need to be upgraded when there is fuel switching, and flue gas desulfurization systems (FGD or "scrubbers"). It is therefore easy for us to be open-minded and embrace a market-based solution to our sulfur dioxide (SO_2) loading problems that would allow a utility to choose whatever SO_2 compliance method it desires.

My remarks this afternoon focus on scrubbing technology, a technology that was largely developed and applied via private funding, unlike CCT. Attached to my testimony for your information are two fact sheets which discuss in detail all significant operating issues with respect to advanced scrubbing and high-efficiency NO_x controls.

In sum, advanced, high-technology pollution controls are available today to remove acid rain precursors efficiently, cost-effectively, and reliably.

II.

In the short time I have now I will address the issues of scrubber availability, effectiveness, cost, and construction time.

(A) The utility industry's own operating data, confirmed by U.S. EPA studies, show that plant operators can depend on scrubbers more than almost any other piece of equipment in the entire boiler operation. Average availability often approaches 100 percent.

This high reliability has been achieved by incorporating computer assisted design and manufacture, and many other scientific advances in chemicals and building materials. Scrubber reliability has also benefitted from years of practical operating experience. At present, scrubbing systems operate at about 151 systems with 65,520 MW of electric generating capacity. This represents about 21% of our Nation's total coal-fired capacity.

Therefore, scrubbers (unlike CCT) offer a factor of confidence to the utility industry which historically has been conservative in embracing new technologies because of legitimate concerns about assuring uninterrupted power.

(B) Operating data prove beyond question that scrubbers can remove more than 90 percent of the SO_2 from utility stacks. The use of recently developed additives can make this SO_2 removal efficiency even higher. The removal efficiencies of CCT are lower.

(C) The cost of scrubbers has fallen dramatically and is still coming down. As the U.S. EPA has recently recognized in revised estimates, the actual retrofit cost of scrubbers will be far lower than those estimates previously presented to Congress.

Among the reasons for lower costs is that the excellent reliability being achieved both here and abroad eliminates the need for a spare scrubber module. Continuing technological advances such as the elimination of reheat, as well as a highly competitive marketplace which offers numerous scrubber system types allowing a utility to select a system that fits its specific needs, also add downward pressure on costs.

Of course, all dollars spent on scrubber retrofits will be recycled in the economy, creating thousands of new American jobs, many of which will be highly skilled. Use of scrubbers also preserves high-sulfur coal-mining jobs. Together, these economic effects would partially offset acid rain reduction costs.

The costs of CCT are largely unknown, resting as they do on a number of future R&D successes, and adoption by a utility industry that, as I have said, has historically shown capital and risk aversion due to legitimate concerns about reliability.

(D) The actual construction of a scrubber system can usually take place, even in a retrofit situation, without disrupting the power plant's operation. Actual tie-in of the scrubber may take, on average, about a month during which the facility will be down. This average of a month downtime should be compared to the major surgery required by many CCT that would require downtime of a year or even more.

The regulatory structure of an acid rain bill should, to be prudent, leave about three years between the time an order for a scrubber is placed at the time of permit approval and the time that compliance must be demonstrated. Some retrofits will not take this long. During this time, design, procurement, construction, and testing occurs. We note, parenthetically, that the Bush Administration Bill (H.R. 3030/S. 1490) allows the U.S. EPA two full years to work out a permit program; if earlier deadlines are desired, this is a time period which could be compressed.

(E) Finally, I wish to note the availability of a highly effective NO_x removal technology known as selective catalytic reduction that is available, can remove over 80% of NO_x emissions, and is used in a growing number of countries and now in California to reduce NO_x emissions from utility boilers. This technology is explained further in the White Paper attached to my testimony.

*

*

*

In conclusion, let me respectfully suggest that in light of the demonstrated reliability and cost-effectiveness of scrubbers capable of achieving immediate SO₂ reductions, and the huge costs to public health and the environment attributed to acid rain by witnesses before this body over the years, the Subcommittee could reasonably decide that it does not make sense to defer a significant amount of needed pollution reductions based on the speculative availability and cost-effectiveness of CCT sometime in the future.

Thank you again for this opportunity to appear and make IGCI's views known.

TESTIMONY OF

DONALD R. PEOPLES

Chief Executive Officer and President
Montana Technology Companies
Butte, Montana

DR. JOEL W. MUEHLHAUSER

Director, Energy Conversion Program
University of Tennessee
Tullahoma, Tennessee

DR. WILLIAM R. OWENS

Chief Scientist
MHD Industrial Forum
Washington, D.C.

TO THE

**SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENTAL AND PUBLIC WORKS
UNITED STATES SENATE**

Washington, D.C.

OCTOBER 3, 1989

TESTIMONY

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE, my name is Donald R. Peoples. I am the Chief Executive Officer and President of Montana Technology Companies, Butte Montana which operates one of the largest energy test centers in the West. We operate the MHD Component Development and Integration Test Facility for the Department of Energy.

I am pleased to have with me two associates:

Dr. William R. Owens, the chief scientist of the MHD Industrial Forum and manager of Gilbert Commonwealth, Inc.'s Washington operations. Dr. Owens is widely recognized as an authority on energy R&D, particularly in the fossil area.

Dr. Joel W. Muehlhauser is Director of the Energy Conversion Program at the University of Tennessee Space Institute, Tullahoma, Tennessee. The Institute is internationally recognized for its energy conversion research and development and has performed definitive research relating to the pollution control mechanism of MHD electric power generation.

We want to thank you for the opportunity to express our views on the proposed clean air legislation. We are neither utility executives nor coal operators. We are developers of technologies that will provide the United States, early in the twentieth century, with some of the most technologically advanced, most efficient, most economic and most environmentally sound energy conversion systems available anywhere.

We therefore are not equipped to address the technical specifics of either the Mitchell-Baucus Bill, or the Administration Bill, and will limit our views to the impact we believe the legislation would have on the Clean Coal Technology Program and on the Department Of Energy's research & development programs, particularly as they relate to MHD electric power generation.

Many R&D programs which have been funded by The Department of Energy (DOE) and its predecessor are just now entering the demonstration phase. Others are rapidly nearing the end of the R&D state and are on the threshold of

near commercial demonstration. Industry in partnership with DOE, has made impressive progress in financing and conducting numerous Clean Coal I and II projects with important environmental advantages. Additional projects have been submitted in response to Clean Coal III.

Unfortunately, none of the R&D Programs and only a few, if any, of the Clean Coal Technology Projects can achieve commercialization by 1995. Both the Mitchell-Baucus Bill and the Administration Bill call for loading limits in 1995 that will force industry to make expensive investments in scrubber technology and/or to switch fuels. Either will seriously impair the introduction of developing advanced coal technologies. The result will be to waste the hundreds of millions of dollars which government and industry have invested in coal technology R&D and will discourage private participation in Clean Coal IV, and V.

The 1.1 lb emission standard required by January 1, 1995 in the Mitchell-Baucus Bill is particularly disturbing, since it essentially will force the twenty largest utilities to immediately adopt scrubbers. The cost of a scrubber is about one-third the cost of a power plant. Scrubbers represent old technology, create sludge and residue which by themselves cause long term ground and water pollution. This large investment will commit these utilities to scrubbers for many years. If the utilities switch to gas or oil, coal in general and western coal in particular will lose a great deal of its market.

We urge that in drafting a clean air bill, the subcommittee take into account the commercial availability of clean coal technology projects on an economically feasible basis. We urge that time be provided for the Government's Clean Coal Technology program to develop. We believe that a small investment in additional time will yield huge dividends in the form of the most environmentally desirable and efficient controls. Accordingly, we recommend two options for the subcommittee's consideration which we believe will ensure the goals of both clean air legislation and the Clean Coal Technology Program:

- 1) Extend the commencement date of both Phase I and II by five years. This will allow the completion of numerous development programs under both DOE and the Clean Coal Technology Program.

2) Integrate the Clean Coal Technology Program with the Clean Air Act implementation schedule. This could be done by implementing Phase II only when the Secretary of Energy has found that clean coal technology is commercially available.

In the absence of such action, we fear that most advanced technologies would have virtually no opportunity for commercialization and that the goals of the Clean Coal Technology Program would not be achieved.

For example, MHD power generation is in its final phase of engineering development under a DOE R&D program cost-shared by industry. MHD represents the ultimate in Faraday based electric power generating systems used almost universally in the production of baseload electric power (Figure 1). It is scheduled for completion in 1993, at which time a full scale commercial demonstration project will take place under a Clean Coal Technology program. MHD will be ready for full commercial use in the early part of the first decade of the new century. Unfortunately, too late to meet either bills Phase II timetable.

Frankly, MHD is the best solution to all of our environmental concerns. The latest tests at the University of Tennessee Space Institute resulted in the removal of 98% of sulphur dioxide from the burning of high-sulfur Eastern coal. In an MHD generator, NO_x is reduced to 0.1 lb/mm Btu and CO_2 emissions, the primary cause of the greenhouse effect, by 38%. In other words, MHD power generating plants will not only meet the Mitchell-Baucus and the Administrations emission control standards, it will better them in all categories (Figure 2).

The highly effective pollution control system is inherent in the MHD process. There is no need for scrubbers that reduce power plant efficiency and produce sludge, a potentially dangerous source of ground and water pollution.

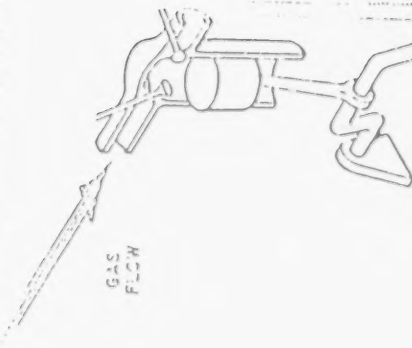
MHD is the most efficient of all coal burning advanced fossil fuel power plants (Figure 3). It will use any grade of U.S. coal. No other Advanced Energy technology system can make all of these claims. In fact, these advantages can be made available to even the oldest plants by retrofitting them with MHD Units.

In order to ensure that the United States has access to this highly efficient, environmentally sound technology and, by the way, position the nation to introduce a new technology to the international market, we urge the subcommittee to adopt our recommendation.

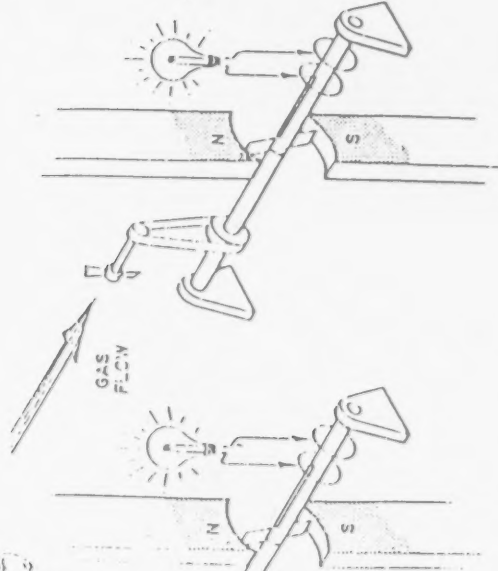
Figure 1

EVOLUTION OF THE MHD POWER CONCEPT

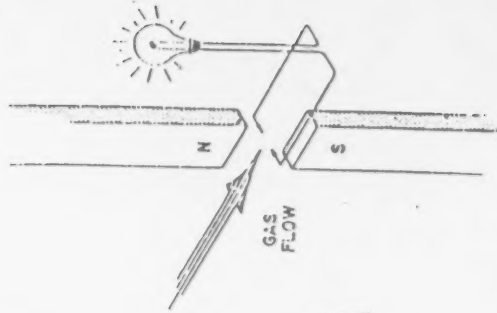
PISTON ENGINE GENERATOR



TURBO GENERATOR



MHD GENERATOR

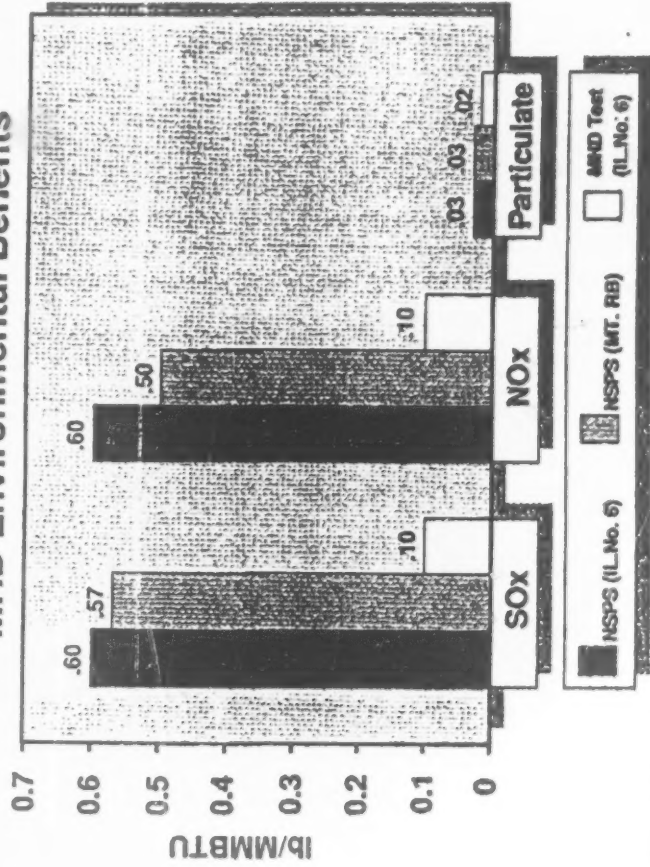


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An MHD generator requires no steam boiler, turbine or rotating machinery. In a conventional power plant, electricity is generated by rotating a solid copper conductor (armature) through a magnetic field. An MHD generator uses a high temperature conducting gas as its armature.

FIGURE 2
Energy Conversion Research and Development Programs

MHD Environmental Benefits

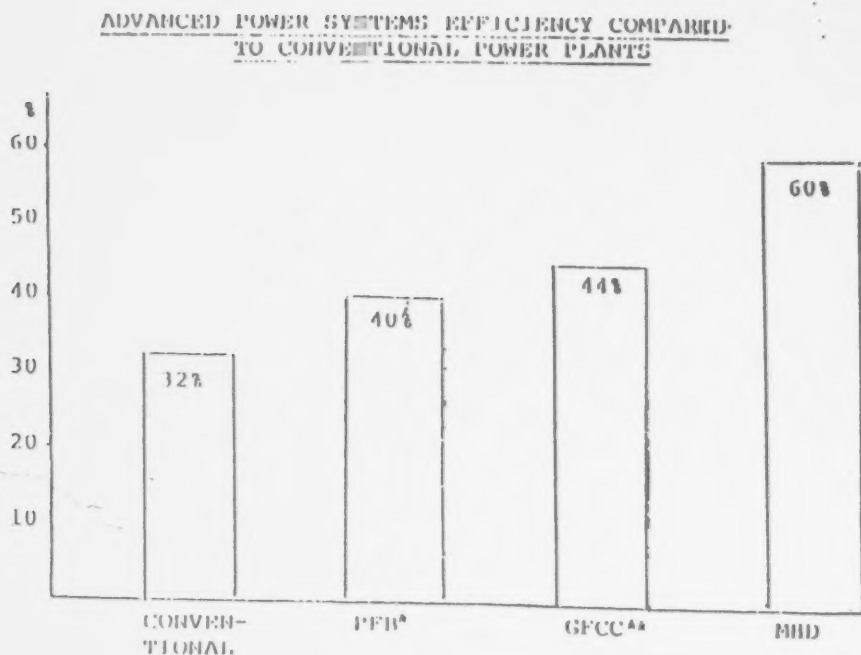


NOTE: NSPS is the strictest requirement for plants built after 1979

CG-1413

The University of Tennessee Space Institute
Tullahoma, TN

Figure 3



SOURCES:

DOE Advanced Power Train Studies by Westinghouse and General Electric

NASA Parametric Study of MHD Power Plants by General Electric and Avco Research Laboratory

*PFB: Pressurized Fluidized Bed

**GFCC: Integrated Gas Fired Combined Cycle Gas Turbine

CLEAN AIR ACT AMENDMENTS OF 1989

ACID RAIN

WEDNESDAY, OCTOBER 4, 1989

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:47 a.m., in room 216, Hart Senate Office Building, Hon. Max Baucus (chairman of the subcommittee) presiding.

Present: Senators Baucus, Warner, Lieberman, Graham, and Breaux.

Senator BAUCUS. The hearing will come to order.

We have quite a few witnesses this morning, five different panels. So I am going to be a bit more strict with the time constraints—that is, we will hold people closer to five minutes each.

The first panel includes Glee Murray, representing the Western Organization of Resources Councils of North Dakota, Montana and Wyoming; Mr. Paul Schmechel, Chairman and CEO of Montana Power Company, Butte, Montana; and the Hon. Robert Abrams, the Attorney General from the State of New York.

Why don't all three of you come up to the witness table?

Glee, you can lead off. Ladies first.

STATEMENT OF GLEE MURRAY, WESTERN ORGANIZATION OF RESOURCE COUNCILS

Ms. MURRAY. Thank you.

I know I am not the witness who was originally scheduled to testify on behalf of the Western Organization of Resource Councils, and I do not consider myself as knowledgeable on these matters as he is, but I know that you welcome me warmly nevertheless. Thank you.

I would just like to say that in addition to the three States, Montana, North Dakota and Wyoming, that you did mention, we do also have members in South Dakota and in Colorado.

It is on behalf of those members, most of whom are farmers and ranchers, that I am here this morning.

As amendments to the Clean Air Act have come and gone over the years, our members have assessed them based on three basic principles, and I would like to just reiterate those principles for you this morning.

Emissions from all sources of SO_2 and NO_x must be reduced in order to reduce the adverse effects of acid rain and global warming on human health as well as livestock and crops.

Energy conservation, energy efficiency, and the use of renewable fuel sources must be the foundation of any acid rain and global warming reduction plan. Efforts to reduce acid rain and global warming must be a National effort, and that means that everybody will have to pay something.

We support your leadership on acid rain legislation that will soon be considered in the Senate, and look forward to working with you on that.

Many of our principals are contained in the legislation about to be introduced. In general we support the 10 million ton SO_2 reduction by the year 2000. At the very least, a 10 million ton reduction is a minimal National effort, a start in clean up. We support the 2 million ton NO_x reduction by 2000, based on 1980 levels.

We support an emissions ceiling as mandated in your bill by the post-2000 cap on emissions. We also support the credit for SO_2 emissions reductions achieved during Phase I, but only if those reductions result from new conservation or renewable energy programs.

We are concerned that repeal of the percentage reduction requirements after the emissions cap goes into effect may create greater demand for western low sulphur coal, and our concern is for the destructive long-term impacts of strip mining on fragile land and precious aquifers.

We are disturbed by the incentives for developing clean coal technologies. At the very least, we feel equal incentives for developing energy conservation programs and renewable fuel sources should also be included.

We feel that way because over the long run, energy conservation, energy efficiency and the use of renewable fuel sources will provide better environmental safeguards than continuing to burn fossil fuels, which are after all finite.

Mandating real reductions in acid rain and global warming must be a National effort. The real task before us all is to craft a bill in which costs are borne by every region, in which no group is exempted. Air belongs to all of us, and clean air is all of our responsibility.

In this spirit, your acid rain bill contains an important but troubling exclusion. Seven Western States would be exempted from Phase I and Phase II SO_2 and NO_x reductions. This exemption has been made to single out so-called clean States, those that have newer powerplants with better emissions controls, so that they will not bear an inequitable cost of SO_2 and NO_x cleanup.

If the clean States exemption leads to compromise deals that undercut the whole acid rain and global warming reduction program you now seek, then we will fervently oppose that exemption.

Thank you very much for the invitation to testify.

Senator BAUCUS. Thank you very much, Glee.

Next is Mr. Schmechel. Paul, go ahead.

STATEMENT OF PAUL SCHMECHEL, CHAIRMAN AND CEO,
MONTANA POWER CO.

Mr. SCHMECHEL. Thank you, Mr. Chairman.

Mr. Chairman, distinguished Senators, my name is Paul Schmechel. I am chairman and Chief Executive Officer of the Montana Power Company. We are a diversified electric and natural gas utility, with several non-utility lines of business, including coal mining. While I speak for Montana Power, our situation is not unique.

Many of my observations apply to other Western States and the utilities doing business in those States.

I do appreciate the opportunity to address portions of the Mitchell-Baucus Acid Rain Proposal, as well as the Administration's bill on acid rain. Without some changes, enactment of the Administration's bill will have some unintended but profoundly harmful impacts on the West and, more particularly, on the State of Montana, on our customers, our company, and on Montana's coal mining industry.

I will get right to the point. The first point I would like to address has to do with the annual tonnage caps on sulphur dioxide, with or without a credit system, because that would have a terribly restrictive effect on industrial expansion in Montana and other States where utilities already have achieved the desired clean air goals.

With the small industrial base that Montana has, it is virtually impossible to find any trade-off potential within the State, and the discussions I have had with utility people in other parts of the country, what I have learned there is that it appears that purchasing of pollution credits will be very difficult to arrange, because those other States and regions simply will want to preserve their potential credits for their own use.

If a credit system must be adopted, we suggest that Montana and other clean States be allowed to bank the differences between their current emission levels and their permitted standards, which are either equal to or better than the 1.2 pound SO₂ proposed standard.

The second point I would like to develop has to do with the emission rate caps, because these will work a hardship on utilities which already have attained the 1.2 pound per million BTU SO₂ standard, or do better than that. And I would like to use as an example our plants at Colstrip in southeastern Montana.

Colstrip I and II, which are large plants, are each rated at 330 megawatts. They are equipped with wet scrubbers that remove 85 percent of the sulphur dioxide being produced in the combustion process. The resulting emissions level is less than 0.3 pounds of SO₂ per million BTU. Now, I want to point out, that is four times better than the proposed standard.

Colstrip III and IV are each rated at 700 megawatts—they are very large plants also. They are equipped with wet scrubbers as well. In this case, the removal efficiency is 96 percent, resulting in an emissions level of only 0.07 pounds per million BTU, and that is 15 to 20 times better than the proposed 1.2 pound standard.

I would point out as well that the latter two plants, Colstrip III and IV, cost \$1.4 billion to build, and of that amount, \$500 million

was spent on air quality control features for that plant, or about 35 percent of the total plant cost.

In addition to the scrubbers, all of our plants burn low-sulphur coal. The problem we have with the emission rate caps is that for plants doing better than 1.2 pounds, emissions would be restricted to 1985 levels under the Administration bill.

In 1985, we were producing from an area of our coal mine that had especially low sulphur coal at that location, and from time to time, we will be producing coal with slightly higher sulphur contents. Now, the problem that creates is that if the 1985 emissions are the cap, and we get into producing slightly higher sulphur content coal, we would be forced to operate our plants at less than their rated capacity, and it just seems that was not the intention of the legislation as it was drafted.

Here you are dealing with plants that are already so clean, it is doubtful that other plants in the country, when they are cleaned, can even attain the results that we have already accomplished. So what we need is some flexibility for super-clean plants.

The third point I would like to make has to do with coal mining near Class I PSD areas and fugitive dust increments. The Administration bill could cause coal mines to be counted for PSD increment consumption. The legislation exempts coal mines in Class II and Class III PSD areas, but does not exempt coal operations impacting Class I areas.

All of the major coal mining in Montana takes place within 25 miles of the northern Cheyenne Indian Reservation, which has been redesignated Class I. The modeling work that was done in the region indicates that production of coal would be severely constrained if fugitive dust is counted for PSD increment consumption for mines near Class I areas. What we are urging here is that the exemption also apply to redesignated Class I areas.

We have no brief with the original Class I designation, where it affected National Parks and wilderness lands, but it is the redesignated areas that cause the real problems.

Finally, we are pleased that the proposed legislation does not call for a National kilowatt hour tax. We oppose such a tax, to subsidize installation of scrubbers on plants that do not have them.

Our customers and customers in our area of the country, where people have spent huge amounts of money installing scrubbers, have already paid the prices for clean air in their electric bills, and we just simply do not think they should pay twice.

Thank you very much. I have submitted a more complete written statement for the record.

Senator BAUCUS. Thank you very, very much, Paul.

Mr. Abrams.

**STATEMENT OF HON. ROBERT ABRAMS, ATTORNEY GENERAL,
STATE OF NEW YORK, ACCOMPANIED BY DAVID WOOLEY, AS-
SISTANT ATTORNEY GENERAL, STATE OF NEW YORK**

Mr. ABRAMS. Thank you very much, Senator.

I am pleased and honored to be able to come and give the perspective of the Attorney General's office in New York this morning.

Seated to my right is the Assistant Attorney General Dave Wooley, who has been the acid rain specialist over these years of our involvement in this issue.

New York's people and environment are among the primary victims of acid rain pollution. Over the years, it has contributed to thousands of premature deaths. It has destroyed our lakes, damaged our crops, forests, buildings, and statues, and shrouded our cities and countryside in a poisonous haze.

Halting acid rain has been among the highest environmental priorities in New York for nearly a decade. We have enacted legislation and taken administrative actions to drastically lower emissions of acid rain pollutants within our own borders.

But action in New York is not enough. We are located near the end of an air pollution pipeline that brings millions of tons of acid rain, air toxics and smog in from other States.

This is a National problem that demands a Federal solution. I have appeared many times before committees of Congress on occasions in the past to press for acid rain legislation. In addition, our office and a coalition of States, together with citizens' groups and Canadian governments have filed over a dozen citizens' suits and judicial review actions against EPA, seeking action against acid rain under the Interstate, International, Tall Stacks, National Standards, and Visibility provisions of the Clean Air Act.

Unfortunately, with the exception of some limited success with the tall stacks and National Standards litigation, these parts of the Clean Air Act have proven sadly ineffective and unenforceable against EPA's continuing refusal to reduce acid rain emissions as the statute requires.

I have reviewed a draft of the Mitchell-Baucus Acid Rain Proposal, and enthusiastically support it as the best vehicle to eliminate the severe interstate inequity of our National air pollution policies.

I also, however, want to congratulate the President for his leadership. Although the Administration bill S. 1490 is weaker than the Mitchell-Baucus proposal in important ways, the President's support for a 10 million ton sulphur dioxide reduction, and for a cap on future emissions growth, is a major breakthrough, and I hope this will end the frustrating legislative stalemate that prevailed during the Reagan days.

I cannot overemphasize, however, the importance of including growth cap provisions in the new law. The Senate must enact the law that prevents needless increases in electric power consumption from eroding the emission reductions that are required by these bills.

The recent experience with energy efficiency planning in New England demonstrates the enormous potential for conservation to prevent growth in electric power demand.

For example, with aggressive investments in energy efficiency, the New England Energy Policy Council estimates that New England States could use 37 to 57 percent less electricity in the year 2005 than utilities originally estimated, without sacrificing personal comfort or economic development.

New York is working toward similar goals. By saving electricity, we can avoid increases in sulphur dioxide, nitrogen oxide, heavy

metals, particulate matter, and volatile organic compound emissions from electric power production.

An emissions cap enacted into law is an important way to ensure that energy efficiency gains are captured to the maximum extent possible.

The emissions cap concept, however, is under attack in the House, and a bill could emerge that would continue wasteful consumption practices and rob us of a long-term acid rain solution. And so I urge the Members of this Subcommittee to strenuously resist all attempts to delete a mandatory emissions cap.

The Mitchell-Baucus proposal contains a significant advantage over the Administration bill in regard to the control of nitrogen oxides. Nitrogen oxides are responsible for about one-third of the annual acidic deposition in the East, but are particularly damaging because they build up in snow, which delivers an enormous nitric acid shock to lakes and streams when that snow melts.

Nitrogen oxides are a primary cause of smog, fine particle pollution, and global warming. In addition, these pollutants injure marine life and degrade the quality of Long Island Sound and other important coastal bodies.

The Administration's acid rain proposal will, at best, merely halt the growth of nitrogen oxide emissions from power plants and industrial boilers. We need a dramatic reduction, and it is the Mitchell-Baucus proposal that would not only halt emissions growth, but would reduce nitrogen oxides by 2 million tons. And so, I strongly urge the Senate to adopt these nitrogen oxide controls for stationary sources as well as the very important provisions in S. 1630 for reducing mobile source NO_x emissions.

While I support the emissions reductions embodied in the Mitchell-Baucus proposal, it is by no means clear that they will be enough to protect health and the environment. The provisions of the Administration bill and the Mitchell-Baucus proposal are exceedingly complex.

They are based upon many assumptions and projections about utility behavior, emissions trading schemes and EPA rulemaking actions. The actual reductions achieved may be less than currently projected.

Even if fully achieved, these emission reductions will fall short of the 50 percent reduction in acid rain precursors that are called for by the National Academy of Sciences. And so, for these reasons, Congress should retain and indeed reinvigorate certain existing provisions of the Act that could provide additional relief in case the new acid rain programs fall short.

I recommend, therefore, that the Senate include in its bill proposed changes to strengthen existing sections 110 and 126 that were passed by this committee in 1987 as part of S. 1894.

And finally, I wish to compliment the sponsors of S. 1690 for strengthening the citizen suit provision, as well as the judicial review provisions of the Clean Air Act. Effective public and judicial oversight is necessary in order to ensure that the new Clean Air Act will be fully carried out.

Congress must eliminate the jurisdictional quagmire that has allowed EPA to ignore with impunity major parts of the existing law.

And so we stand today at a critical juncture. At long last, we have a President who is giving acid rain control the public focus and priority that it deserves. It is therefore urgent for Congress to reach consensus this year, to truly protect our Nation's air. I commend you for taking the leadership to fashion this important legislation, and to hold these public hearings giving a broad cross-section of our country the opportunity to be heard.

Senator BAUCUS. Thank you very much, Mr. Abrams.

Mr. Schmechel, most Western States have been very upset with the provision in the law called percentage reduction. The bill that Senator Mitchell and I are to introduce repeals percentage reduction.

If you could tell us the degree to which you think that is beneficial or not, to Western States?

Mr. SCHMECHEL. Senator, if in fact that repeal can come about, we feel that is beneficial—we think not only to the Western States, but to the country, because it truly provides the freedom of choice, we think, that industry needs in solving the acid rain problem most effectively.

It gives them the ability to do fuel switching, or fuel blending, whatever else might be required. Presently, with the requirement for percentage reduction, that is a mechanical fix, and once you go to the extent of having to install scrubbers, let us say, your freedom of choice is pretty well limited.

Senator BAUCUS. Also describe with a little more specificity your concerns about allowance trading. In your testimony, you said—if I heard you correctly—probably a utility that has reduced its emissions would bank its allowance, not perhaps sell it to some other utility.

Could you be a little more specific about your concerns about this system of allowance trading, and how it might affect, say, a utility? I am asking you to do this because a later witness is someone who is very much involved with designing this system. So I would like you to tell what your concerns are, so that not only the committee can hear it, but he can hear it too, and perhaps he can address your concerns.

Mr. SCHMECHEL. Very good, Senator.

We just do not have very much industrial development in Montana. If we are to gain any kind of industrial activity, and we have a system of tonnage caps, an annual system of tonnage caps, there is no place we can look in Montana to reduce any kind of SO₂ tonnage at the present time. We just do not have enough there, I guess, to reduce, and enough would be too much.

But there just is not the opportunity to make any reductions. When you are dealing with plants like ours—and I will use Colstrip III and IV as an example—where you have 96 percent of the SO₂ already scrubbed out of the stack, it is hard to make any improvements on that.

It is kind of like the theory that the last mosquito in the tent is harder to kill than the first hundred mosquitoes in the tent. So, to gain any more is going to be very difficult.

In looking to buy reductions from any other areas of the country, we think, it would be not a very practical thing, and the visits we have had with people in other areas is such that the public service

commissions in those States will very likely intervene if there is any attempt to sell out some of those credits, some of those emission credits.

So we do not think the opportunity is there.

Senator BAUCUS. You think they will bank those credits? They will not sell them?

Mr. SCHMECHSEL. They will probably bank them for their own use, because they will be covetous about their own industrial development. So they will want to bank those, and preserve those credits for their own areas.

Senator BAUCUS. An earlier witness said that by the year 2000, there will be 14 billion tons of SO₂ credits in the bank, if I understood him correctly. I am not quite certain where he got that figure—it must be generally available.

If that figure is true—and I do not know that it is—if it is true, are you saying that those would be credits that utilities would develop, that they would keep for their own growth, rather than sell to other utilities that were trying to grow?

Mr. SCHMECHSEL. That is the position that we believe will prevail, Senator.

Senator BAUCUS. And that is your position based on what conversations you have had with other utilities?

Mr. SCHMECHSEL. With other utility executives, yes.

Senator BAUCUS. Well, I guess one question in part is whether public utility commissions will let utilities that reduce and try to bank go ahead and bank them.

The State and public utility commissions play a role in this, and they might say, "Okay, the utility has to return that credit back to the ratepayers." I do not know. This gets pretty complicated here.

There are a lot of i's that have to be dotted, and t's crossed, if this is going to work, because it is new, and it is something that has not been tried before.

I have no further questions, but believe me, this general area is going to receive intense examination over the next year, the next weeks and months, and I hope it will work.

Senator Lieberman.

Senator LIEBERMAN. Thank you, Mr. Chairman, and welcome to the members of this panel.

Senator BAUCUS. Senator, just a second.

I would apologize to the panel. There is another hearing across the hall, and I will be over there for about 15 minutes and then be back. Thank you.

Senator LIEBERMAN. I particularly want to welcome Attorney General Robert Abrams from New York, my former colleague when I was Attorney General of Connecticut, and may I say my mentor and a leader among attorneys general in many ways, particularly in environmental protection.

There is a real sense of justice that I have, Bob, as I think of you helping us after all the years that you led the Northeast AGs in trying to get the Government to recognize that there is an acid rain problem, and that the EPA ought to do something about it.

Most of it, as you said in your testimony, ends up with the frustrating result now to be here at a time when it appears there is an emerging national consensus, certainly a Presidential and Congress-

sional consensus, that there is a need for action. I personally welcome you, and welcome your contribution to this effort, both before and now.

Let me ask you about a few parts of the program, the ideas that have been put forward. I had a conversation the other day with the New York State Commissioner of DEC, Mr. Jorling, who had expressed some concern about the concept of trading emission allowance permits, that are part of the bills that we are considering, and wondering whether that system may have some adverse effect on the Northeast. It may not guarantee us the kind of reduction in acid rain that we are looking for.

Have you or your staff examined that particular issue, and do you have any counsel to give us?

David, needless to say I welcome you too. I remember fondly the spears that you carried for us over the many years, as we went into court.

Mr. ABRAMS. Senator, I have not had a chance to look at the DEC figures on that issue yet. Basically, the testimony that was given yesterday seems to support the concept that the economics will drive the reductions to occur in the areas where the Northeastern States need them the most—in other words, the Ohio Valley and the Upper Great Lakes States.

We certainly will be looking into that, and I intend to provide some additional information to you on that subject.

Senator LIEBERMAN. I appreciate that.

Bob, let me ask you—I certainly share the emphasis that you have placed on the importance of having a cap on emissions as part of the bills that we adopt, and I just want to ask you to address yourself a little bit more to that.

Particularly, we heard some arguments before the committee over the last couple of days that a cap may stifle economic growth in certain sections of the country. I would appreciate your reaction to that argument.

Mr. ABRAMS. First of all, I think the cap is important because we cannot afford the prospect of doing something significantly with one hand, and then on the other hand having all of that dissipated. So, as we seek to have reductions, and we do not put a cap on the growth of those emissions, then I think we have really missed the significant opportunity that is before us.

I do not think, at the same time, that it inhibits our economic growth. I think that with the development of technology, with new ideas that have emerged that are being utilized in other parts of the world in a far more aggressive way than we see in the United States, we would be able to not only ensure the clean and healthful environment for our citizens, but I see, as well, the opportunity for economic investment and keeping the engine of America going with the development of jobs and a strong economy. So I do not really see where that is an argument that really has strong merit or moment.

Senator LIEBERMAN. I think you make a good point, that there are other sections of the world, certainly in Europe, where they are beginning to apply some of these technologies, and clearly not only are they cleaning up the environment, but the economy is doing well at the same time.

You are right on target, I believe, in the emphasis that you put on energy conservation. It is the issue that goes beyond the immediate question of acid rain, and I wanted to ask whether you had any specific measures that you think we ought to include in this bill to encourage energy conservation?

Mr. ABRAMS. Well, I think, David, if you want to talk about some particulars—anything we can do to move more strongly in that direction, I think, is critically important.

A great deal of rhetoric over the last couple of decades has been lofted in that regard, particularly during the period of the OPEC crisis, but I think we have not really moved as vigorously as we can to really deal in the area of conservation, whether it is energy conservation in the utilization of motors, in our facilities, or the kind of lighting that we deploy, or the kind of mindless abuse that one finds as a result of carelessness and recklessness.

I am reminded of this, I guess, virtually every night when I leave my office in Lower Manhattan, and see the incredible towers all lit up at night. It was not true during that period of the OPEC crisis. We were more cautious and more mindful and conserving more energy in a systematic and intelligent way, and so anything that we can do in this whole area of conservation, I think, makes tremendous sense.

Now, David, are there specifics in response to Senator Lieberman that you think might be included in the bill?

Mr. WOOLEY. Well, my impression is that the cap itself is a major impetus towards conservation planning by electric utilities, so that is probably the most important thing that we can do at this point in this bill. Retaining that cap is quite essential.

I think that the trading and the allowances of provisions will also encourage the use of more efficient new plants, so there are benefits there as well.

Those two things combined are a major step forward—not everything we need on conservation, but a major step.

Senator LIEBERMAN. Thank you.

Senator GRAHAM.

Senator GRAHAM. Senator, I gather that we have the basis, maybe, of a constructive debate between Mr. Abrams and Mr. Schmechel on the question of the growth cap.

Mr. Schmechel, you expressed some concerns about basics, specifically the use of 1985 as the base year for establishing the cap, and then its applicability to super-clean facilities such as your firm has developed.

I would be interested in your comments on the observations of Mr. Abrams, the degree to which the cap can be moderated in its effect through increased conservation efforts, and the appropriateness of providing some flexibility.

Mr. SCHMECHEL. Okay. Let me describe the distinction between what is available in terms of additional emissions in a State like Montana, and what may be—or at least additional industrial development in a State like Montana, as opposed to some of the Midwestern States and those in the Ohio River Valley.

We just do not have a lot of industrial development at the present time, as I responded to Senator Baucus. So, if we back

down, we just have not got any room to back down. We are already down.

We have accomplished the goals of clean air. They have lots of room, in many of the industrial parts of the country, and if they move below 1.2 pounds of sulphur dioxide per million BTU, they have something to bank.

We are below that now, and we have nothing to bank. So they have got—there is lots of potential for them to back down, and then they will have those bank credits for industrial development. So that is the distinction between the two.

We are troubled by that. We just—if we have to go out and try to buy credits, get some assigned through purchase, or through a competitive system, we are just of the understanding that they are not going to be available. The regulatory agencies and the States are going to be very covetous about those, and preserve those for their own States.

It is not a question of increasing above some levels in parts of the country; it is just the question that we cannot—we are already so low, we have not got any place to go.

I would like to comment on his discussion about treatment for conservation, and the whole concept of conservation as being a resource. My company is doing a good bit of that right now, and we are moving into a much more aggressive program.

The one thing that has to be done there, however, is to make sure that those investments in conservation get proper regulatory treatment, because they are not tangible assets of a utility. They are investments that you make in customer premises, and they just simply have to have proper regulatory treatment, otherwise utilities are going to be very reluctant to enter into those kinds of investments.

Senator GRAHAM. Back to the issue that you concluded with, conservation expenditures, and enhancement to industrial facilities. How is that being treated in the State of Montana, and what is a role for Federal policy relative to how the State regulatory agencies should treat investments in conservation?

Mr. SCHMECHEL. It is a delicate issue, because I know that the Federal Government does not like to tread into issues involving State regulation.

But in our State, our commission has elected to apply a 15 year amortization period to those conservation investments. We think it is too long. No other State in the country extends that amortization over 15 years. The longest that you see generally is 10 years, and in some States, 5 years.

When you have a huge investment out in terms of those conservation improvements in industrial plants, and in commercial installations, and we are extending them to residences—when you have that out there, and you have commission bodies that change with each election, the next commission can take a different approach to it, and say perhaps that those were not altogether prudent investments. And we are worried about that, if you have a 15 year amortization period.

We think that something on a shorter term will encourage conservation. Now, whether the Congress wants to inject itself into that or not, I do not know. They have done so with investment tax

credits, where utilities had those available to them for the large construction programs that they had, and it may be that Congress would like to inject itself into that arena.

Senator GRAHAM. Out of curiosity, what are you allowed to depreciate those investments for your tax purposes?

Mr. SCHMECHEL. For tax purposes, I really do not know that. I do not know what that is.

I will furnish that, though, to you.

Senator LIEBERMAN. Thank you, Senator Graham.

Ms. MURRAY, let me get you into this discussion.

I appreciate the perspective that you bring, particularly the emphasis on the use of renewable fuel sources as foundation of an acid rain and a global warming policy.

What do you see as the major impediments to the greater use of those alternative energy sources, and what can we do to try to stimulate their use?

Ms. MURRAY. My members have a lot of ideas about that, and I would do them an injustice, I think, trying to speak on their behalf. I would like to provide you a longer and more detailed answer to that, when I have a chance to ask them that. So I will provide that as an answer for the record.

And thank you for asking that question—it is an important point.

Senator BAUCUS. Okay, and as part of that, if you have any ideas, or if they do, for specific provisions in this bill, that would promote alternative energy sources as a way of getting at the problem of acid rain, we would encourage that.

[Ms. Murray supplied the following:]

Additional Information Submitted for the Hearing Record
of October 4, 1989
before the Senate Subcommittee on Environmental Protection

As stated in my written testimony on behalf of the Western Organization of Resource Councils, the foundation of any acid rain and global warming reduction plan must include energy conservation and energy efficiency, as well as the use of renewable fuel sources. A leak-proof cap on future SO₂ and NO_x emission growth (in conjunction with an emissions trading system) is an essential part of what we can begin doing now to promote energy conservation and renewable energy efforts. With emission ceilings and required offsets for new SO₂ emitters in place, utilities will rely more earnestly on conservation and clean, renewable energy technologies for new electricity generation. Any weakening of the emission ceilings and offsets will render the proposals for acid rain reduction currently being considered by the Senate meaningless.

Repeal of the "percentage reduction" requirements and emissions exemptions for "clean" states do nothing to promote energy conservation, efficiency or use of renewable fuel sources. In fact, repeal may encourage greater use of fossil fuels (in the form of new coal-fired power plants without scrubbers) which is the antithesis of a future-oriented policy to reduce acid rain and global warming. A future-oriented policy must be based on conservation and renewable fuel sources to meet growing end-use energy needs. More demand for western coal will result in more destruction of fragile western land and aquifers, which must sustain western citizens long after coal reserves have either played out or been replaced by other energy sources.

Incentives for improving end-use efficiency of electricity and implementing renewable power generating technologies should be provided in any federal acid rain legislation. Current legislative proposals for providing incentives for developing "clean coal" technologies favor short-term fossil fuel technological "fixes" over infinitely renewable fuel source technologies. In no way should "clean coal" technologies be encouraged at the expense of cleaner, renewable fuel sources.

The American Council for an Energy Efficient Economy has suggested several ways that renewable technologies, along with conservation and energy efficiency, can reduce acid rain and global warming. I would like to submit their suggestions for the record. A copy is attached.

Thank you for the opportunity to provide the hearing record with additional information.

PROMOTING ENERGY EFFICIENCY AND RENEWABLE ENERGY
AS PART OF ACID RAIN LEGISLATION

1. Maintain the emissions ceilings and the required offset of SO₂ emissions from new power plants as proposed by the Bush Administration.

The SO₂ emissions ceiling approach, including requiring offsetting of emissions from new power plants constructed after 2000, is a powerful incentive for conservation and renewable energy efforts on the part of utilities. It is the only approach that adequately safeguards the environment over the long run, and it in no way constrains economic growth or increasing levels of energy services (e.g., heat, light, refrigeration, etc.). Preserving the emissions ceilings as proposed in the Bush bill is one of the most important steps the Congress can take to promote conservation and renewable energy efforts within the Clean Air Bill.

Studies conducted and published by the American Council for an Energy-Efficient Economy, the Center of Clean Air Policy, and the Ohio Office of the Consumers' Council show that aggressive electricity conservation efforts by utilities in heavily emitting states such as Ohio, Indiana, and West Virginia could provide large economic benefits. These benefits result from cutting power plant operating costs, cutting emissions reduction costs, and by deferring the need for the construction of costly new power plants. In fact, the economic savings from end-use efficiency improvements are large enough to more than offset the cost of other SO₂ emissions controls even in a state like Ohio. Thus, promoting conservation through firm emissions ceilings and the other provisions (see below) is the key to minimizing or eliminating adverse economic impacts from new acid rain restrictions. Firm ceilings with emissions offsets required for new power plants also encourages utilities to rely on clean renewable energy technologies for new generating resources.

2. Provide credit for SO₂ emissions reductions achieved during 1990-95 as a result of new conservation and renewable energy efforts.

Increasing the efficiency of electricity use and implementation of renewable power generating technologies (e.g., biomass, solar, or wind technologies) will lower emissions of all pollutants including SO₂, NO_x, and CO₂. Also, pursuing conservation together with acid rain clean-up can reduce or eliminate adverse economic impacts in a region. Therefore, utilities in the Midwest and other regions affected by the legislation should be encouraged to undertake new conservation and renewable energy efforts. Because of the time period required to accumulate substantial electricity savings, utilities should be encouraged to begin such efforts in the near future.

One way to do this would be to offer utilities allowances for SO₂ emissions reductions achieved during 1990-95 (i.e., before the Phase I deadline) as a result of new conservation and/or renewable energy programs. Any allowances obtained during 1990-95 could be used to offset excess emissions starting in 1996. Also, allowances could be sold to other utilities in accordance with the emissions trading provisions. This will encourage early start-up of such programs without increasing ultimate pollutant loadings. These new allowances would only apply to emissions reductions achieved before 1996; utilities will receive credit for emissions reductions due to

conservation and renewable energy programs starting in 1996 under the Bush Administration proposal.

If such a provision is adopted, estimates of the emissions reductions from conservation and renewable energy programs will be needed. To do this, utilities will first have to evaluate electricity savings from conservation programs and electricity purchases from renewable energy programs. In order to minimize the possibility of inflated claims, we suggest that credit only be given for programs where a measurable amount of electricity is generated or where utilities pay for savings from specific conservation measures. With the latter, utilities have a financial incentive not to overestimate savings.

Once electricity savings and supply data are obtained, a corresponding amount of SO₂ savings must be determined in order to provide the emissions allowances. This could be done using the average SO₂ emissions rate from the fossil fuel power plants owned by each utility, or by evaluating which power plants are not being operated as much due to conservation and/or renewable energy programs and using the actual emissions rates for these plants. We suggest that EPA be given the responsibility for examining these options and for issuing guidelines concerning the determination of SO₂ emissions allowances from early conservation and renewable energy efforts. Also, EPA should monitor implementation of this provision and reject excessive claims for allowances should they occur.

3. Do not provide special treatment for so-called "clean coal" technologies.

It is our opinion that all options for cutting SO₂ emissions should be allowed to compete fairly taking into account the full costs associated with different energy resources. In particular, so-called "clean coal" repowering technologies should not be given preference through possible time extensions, regulatory incentives, or other means. Given the serious threat of global climate change due primarily to carbon dioxide emissions, it would be a mistake to promote coal technologies over conservation and renewables. Therefore, we urge the Administration and Congress to eliminate Sections 508 and 515 of the President's clean air proposal.

Section 515 of the Administration's acid rain bill proposes sweeping federal regulatory incentives to promote clean coal technologies. This is a biased and misguided proposal that also infringes on States' regulatory authority. As proposed, the section should be eliminated. If the Federal Energy Regulatory Commission (FERC) is brought into the legislation, it should be directed to work with states to develop, demonstrate, and evaluate ratemaking reforms and other techniques that give utilities financial incentives for providing least-cost energy services (with environmental impacts and emissions control costs factored in). Such a provision should be "energy source neutral" and should not infringe upon the authority of state utility commissions.

4. If clean coal repowering technologies must be singled out, then adopt minimum efficiency requirements and require SO₂ offsets.

We strongly endorse eliminating special treatment of clean coal repowering

technologies. But if time extensions and/or other special incentives are offered, it should be coupled with minimum efficiency and SO₂ offset requirements. Advocates for the Clean Coal Program argue that there will be efficiency improvements as well as SO₂ reductions with these technologies. This is true in some cases, such as coal gasification along with steam-injected gas turbines or combined cycle power plants. However, there could be little or no efficiency improvement with other technologies, such as atmospheric fluidized bed combustion.

If clean coal repowering technologies are encouraged through provisions such as a possible time extension, utilities should be required to raise the efficiency of the affected power plant. Another way of stating this is that the power plant's heat rate (Btus burned per kWh) must be reduced by some minimum amount. We suggest a minimum heat rate improvement of 15%. For example, a plant starting at a heat rate of 10,600 Btu/kWh would have to be repowered to no more than 9010 Btu/kWh in order to qualify for a time extension. This would ensure that there are real fuel savings and CO₂ benefits. A repowering that does not satisfy this condition could still be performed, but the utility would not be granted a time extension or any other special incentive.

Second, if utilities are given extra time to meet their emissions reduction requirements if they choose to implement clean coal repowering technologies, then they should be required to offset excess SO₂ emissions due to the deadline extension. The offset could come from conservation, renewables, fuel switching, or other techniques. However, the offset must be separate from emissions reductions the utility is making in order to meet its main ceilings. For example, if a utility wants a three year time extension on a 500 MW power plant that it plans to repower with a clean coal technology and this leads to an additional 50 thousand tons of SO₂ emissions, then the utility should be required to reduce its SO₂ emissions by an additional 50 thousand tons in some other way.

Senator BAUCUS. Mr. Schmechel, let me go back to the percentage reduction requirements. I understand that a couple of your facilities, at least, are operating at a very low rate of emissions, for which we are thankful and congratulatory to you.

I presume that they are generating power economically, is that fair to say?

Mr. SCHMECHEL. They are, sir.

Senator BAUCUS. Let me ask this sort of devil's advocate question. Is there any danger that the repeal of the percentage reduction requirements will result in dirtier air, dirtier plants, if I could put it that way, than the ones that you are operating now, by essentially taking the pressure off?

Mr. SCHMECHEL. There really is no possibility of that happening, because we are operating under very restrictive permits, which were gained through the Environmental Protection Agency and the State of Montana. So we are limited in any event. We could not take the controls off, period. We just could not.

Senator BAUCUS. What about new plants? That is really my concern—new plants that could be constructed. Should we be concerned that without the percentage reduction requirements that those plants might operate less cleanly than the ones you have got going now?

Mr. SCHMECHEL. If you build new plants, and you have a 1.2 pound standard, they will simply have to meet that standard, and the best way to accomplish that is to let the utilities have the freedom of choice, whether it is through technology fitup on the plant, or whether it is through buying a very super-clean fuel, let us say, from—and I will use the Powder River Basin, because it happens to be available there.

There are other areas of the country where you can buy very low sulphur coal. But without having to go through the huge investment, you can conceivably technically accomplish the same thing, by using super low sulphur fuels.

Senator LIEBERMAN. Bob, let me come back as a final question to where, in a sense, we all began, as Attorneys General, with the growing evidence that acid rain really was a problem. I remember participating with you once at a meeting where we announced a lawsuit, and there were pictures of dead fish in some lakes, I believe in the Adirondacks.

Is it fair to conclude that as time has gone by, and more evidence has been gained, that the evidence is clear that those lakes are dead, or are dying, because of acid rain?

Mr. ABRAMS. Yes, and not only those, but others as well. That is why there is enormous concern about this issue, and a desperate need for the fastest possible action.

While the problem was first noticed in the Adirondacks, it has now been traced, in terms of environmental degradation, to the highlands of the Hudson Valley and the Catskills. As I traverse the State and hold hearings, I hear from people in different parts of the State of the damage as a result of acid rain, the damage to properties, physical properties.

A woman in Kingston a couple of years ago took me to a local park and showed me how the monuments were being worn away because of the problem of acid rain. Economic damage to local gov-

ernments because of the damage to buildings, bridges that have to be repaired because of this problem—farmers talk about the damage to forests and crops, the Office of Technology Assessment, tells us about the damage to human health.

They have actually traced thousands of lives shortened each year, particularly people with cardiac and respiratory ailments, as a result of the inhalation of the microscopic particulates that people breathe in.

And so, the problem is an enormous one, and every day that goes by, it gets worse. The visibility issue is there, and that has an economic impact on communities that rely upon people to come and climb mountains and enjoy visibility, or to come and fish and to have recreational opportunities. So there is tremendous damage to our natural heritage, as well as an economic cost as well, and that is why I am really hopeful and excited that this is the moment when the House and the Senate, together with the President, can fashion the consensus that is necessary for us to deal with this significant issue.

Senator LIEBERMAN. Amen. Thank you.

Senator Graham, do you have any other questions?

Senator GRAHAM. I would like to ask a couple of questions.

One, what is the current state of the law in terms of States' legal responsibilities here as it impacts on a recipient State?

Mr. ABRAMS. Well, David, has that not been the subject of some debate as a result of the subject of our lawsuits? We have taken a view that under the Clean Air Act and the State implementation plans that have been filed, there are certain requirements, and relaxed emissions have been granted by EPA over the objection of certain States, and as we have sought to litigate some of those issues in the courts, we have found the need for changes in some of those sections of the law, because the courts have put technical roadblocks in our way in order to address those kinds of issues.

Anything else that you want to amplify?

Mr. WOOLEY. We brought a number of cases in the Federal Courts to test the interstate provisions of the Clean Air Act, as well as others, and we ran into two problems.

One is that the interstate provisions, as they are currently written, depend upon the victim State showing violation of the National Ambient Air Quality Standards.

Well, unfortunately, the ambient air quality standards were never set to address acid rain and visibility properly, so there was a weakness there, and that is one thing that needs to be corrected. That is what was proposed by this committee in its bill in 1987, so that is one correction we very definitely need.

The other thing that is arisen—

Senator GRAHAM. Do you feel that the legislation—either that introduced by Senators Mitchell and Baucus, or that which the Administration proposed—adequately deals with that question?

Mr. WOOLEY. Well, as regards acid rain, it will certainly take us a long way down the road to eliminating this problem. But what the Attorney General has testified is that there are some uncertainties about how—whether these bills will, in the long run—8, 10, 12 years out—will be fully adequate to address these problems.

And there are other interstate problems as well in the involving, air toxics and smog, and those provisions there is even more doubt whether those provisions will be adequate to elements interstate pollution.

So, what we have suggested is to reinvigorate this generic provision, to provide a safety net for resolving these kinds of interstate disputes and preventing these kinds of interstate problems in the future.

We do not really know what the interstate pollution problems of the late 1990s and early 2000s are going to be, and it is a good idea to have this kind of additional safeguard.

Mr. ABRAHAMS. David, isn't it correct that the Mitchell-Baucus bill does not have, with particularity, the kinds of changes that we are talking about, but the 1987 version that passed the Senate had those provisions, and we are asking the committee to take a look at those provisions to try to include that in the Mitchell-Baucus proposal, because we think that would be helpful. This proposal arises from the litigation experience of not just New York, as Senator Lieberman indicated—there were a coalition of States, and again this was not a partisan issue, because there were Republican governors as well as Democratic governors, and attorney generals of different political parties, and we were joined in some of that litigation by some of the provinces of Canada.

So that might be instructive, to see how we need some greater strengthening in the sections of the new Clean Air Act, so that it gives us these safeguards in the future, in terms of that kind of interstate pollution.

Senator LIEBERMAN. General Abrams, Ms. Murray, thank you. Your testimony has been extremely helpful, and we appreciate the time that you took to come here and be with us this morning.

Thank you.

Before we move on to Panel II, I welcome and ask to come to the table my colleague and friend, the Senator from Illinois, Paul Simon.

STATEMENT OF HON. PAUL SIMON, U.S. SENATOR FROM THE STATE OF ILLINOIS

Senator SIMON. Thank you very much, Mr. Chairman.

It is good to follow the distinguished Attorney General of New York, who is a friend of some years.

I am pleased to be here. I would like to enter a statement in the record.

Senator BAUCUS. Without objection.

Senator SIMON. Illinois is very much concerned about where we are going in this whole field. We have more coal reserves than any other State.

If the President's package was enacted as is, we would suffer the loss of about 20,000 jobs. But it is not Illinois alone that would lose.

We export two-thirds of our coal. One of those States that we export a lot of coal to is Florida. We have decreased emissions in our State. Two of the States that have increased emissions are Louisiana and Florida.

What I suggest is that we ought to have some cost burden sharing in the Nation. We have had cost burden sharing in nuclear energy, and there is a Wall Street Journal article here that I would like to enter in the record that shows that the subsidy for nuclear energy is in excess of \$15 billion a year.

[The article referred to follows:]

Hiding the True Costs of Energy Sources

By H. RICHARD HARRIS
And AMORY B. LOVINS

How much does the federal government spend to subsidize energy to make it look cheaper than it really is? Ten billion dollars a year? Twenty billion?

That was the range of conventional wisdom before Rocky Mountain Institute started counting. We've conservatively computed government and industry subsidies of 17 kinds of tax breaks, program outlays (net of revenues) from 21 agencies' budgets and the reduced marginal cost of capital from eight agencies' loans and guarantees.

These major items just for fiscal year 1984 totaled more than \$46 billion. We're still counting. Adding smaller items should bring the total to more than \$60 billion a year. And it's so unevenly allocated that 1984 energy output per dollar of subsidy varied by a factor of nearly 200 between different energy technologies (see chart).

Everyone loses, except the recipient industries. Taxes are \$46 billion a year higher. Skewed subsidies steer as even larger amount of private investment into capital intensive but uneconomic projects, forcing up interest rates. The U.S. trades new multibillion-dollar export markets (losing its solar cells in Japan, its wind turbines to Denmark) for largely imaginary ones (synthetic nuclear plants to China). Finally, uneconomic energy investments make everyone pay inflated energy bills for decades to come, making American industry less competitive abroad. We end up exporting fewer goods, importing more oil, and increasing the trade deficit.

So what if energy is subsidized? The beneficiaries say: Government underwrites airports, water projects, hospitals, factories, condos—practically everything except analyses of federal energy subsidies. But though regrettably true (and outside the scope of this study), that self-serving view ignores two key issues.

First, when true energy costs are revealed, people underinvest in energy productivity, wasting much of the \$46 billion-plus in annual U.S. energy expenditures.

Second, unequal subsidies to competing energy options leverage and amplify the miscalculation of private capital. Investments in conventional, low energy supply excluding energy-saving measures totaled \$125 billion in 1982 alone, or two-fifths of all U.S. investment in new plant and equipment.

For example, the most capital-intensive form of energy, electricity, delivered 13% of U.S. energy but got \$36 billion (66%) of fiscal 1984 subsidies, decreasing its apparent average price by about a 60%. Electricity, counted at its least value, got more than 11 times as much subsidy per unit of energy as directly used oil, gas and coal, and was at least 40 times as heavily subsidized as energy-saving technologies. No

winner utilities are still investing about a dollar per household per day to build power plants they don't need and can't afford. Their subsidies almost equal their investments. That's not just a free lunch: It's a lunch the Treasury pays them to eat.

Nuclear power provided 13% of U.S. electricity in 1984, or 4.8% of the nation's primary energy consumption counting the heat produced by the reactors. The nuclear electricity sold, however, was only 1.3% of all delivered energy, about half as much as wind delivered. Yet nuclear power got 94% of all federal energy subsidies. Each dollar of those subsidies yielded only 1/80th as much energy delivered or saved as a dollar of subsidies to renewable

energy sources were just continuing to feed at the federal nuclear trough.

Why is that trough kept so full? Partly by sheer political muscle—the electric utility industry has several Washington lobbyists per member of Congress. Often, subsidies simply outlive their purpose: Depletion allowances were introduced in 1913 to spur energy output for World War I, rural electrification began in the 1930s, 1951 capital-gains treatment of coal royalties matched subsidies to timber harvest and spurred postwar mining.

One 1985 rationale—energy independence for national security—cannot withstand scrutiny. During 1979-83, savings provided more than a hundred times as much

couldn't mine and protect Mideast oil fields. Yet diverting one year's RDP budget into well-designed weatherization programs would eliminate Mideast oil imports. Experience over the past decade proves that displacing foreign oil and husbanding scarce resources at home can be done cheapest and quickest by energy efficiency and renewables—the chief causes of today's durable fuel and power glut.

Subsidies to efficiency and renewable energy sources (such as solar tax credits) will abruptly expire at the end of this year without legislation such as that by Rep. Cecil Helms (R., Hawaii) and Sen. Mark Hatfield (R., Ore.). However, other energy subsidies will continue even, by and large, under the Treasury II proposal. This worsening imbalance will prevent the free market from smoothly replacing exhaustible with sustainable resources over the coming decades. Meanwhile, lopsided subsidies cheat the taxpayer, destroy fair competition, boost future oil imports and erode national security.

You'd think the free-market Reagan administration would love to find all this out. Well, hardly. No federal agency has studied energy subsidies since 1978; this spring, the Department of Energy canceled its contract for an update. The DOE insists today's subsidies are fair, but has no data. No federal agency, despite our entreaties, has studied who is getting how much subsidy, yet Congress is making major subsidy decisions.

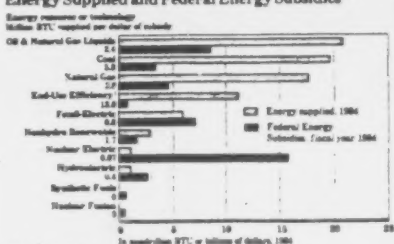
Our analysis used the best data available, but it can doubtless be refined, and we solicit everyone's help. Nonetheless, our findings, though preliminary and approximate, suffice to indict present subsidies and proposed Treasury II tax revisions: They both make the playing field on which our nation's energy options are competing about as level as the Capitol dome.

Our nation's energy bills today are about \$16 billion a year less than they would have been at 1973 levels of efficiency. Yet, if the U.S. were now as energy-efficient as Western Europe is, that annual bill would fall by an additional \$20 billion—enough to balance the federal budget. By the year 2000, the cumulative net savings would be several trillion dollars—enough to pay off the entire national debt.

To capture such immense savings, America needs energy prices that tell the truth. If we can't subsidize the entire energy sector—by far the best solution—let us at least be fair and subsidize all supply and savings options equally. Or is tax reform only a cover for selective corporate socialism?

Mr. Harris and Mr. Lovins are respectively research associate and director of research at Rocky Mountain Institute in Old Snowmass, Colo.

Energy Supplied and Federal Energy Subsidies*



* Preliminary data.
* Conservatively assuming more efficient use caused only half of the 1979-84 drop in primary energy demand per dollar of real GDP.
Source: Rocky Mountain Institute calculations.

source other than large hydro and energy savings.

What are all these nuclear subsidies? Nine agencies' civilian line-item expenditures in fiscal 1984 provided \$13.2 billion directly. Eight kinds of tax breaks totaled \$38.2 billion; some of them are unknown in other industries, and all are unavailable for (say) insulating your roof. Finally, federal loans and guarantees saved the nuclear enterprise \$12.2 billion in financing costs. We still haven't evaluated some subsidies to the nuclear fuel cycle or to several federal power marketing administrations, and we exclude impermissibles such as the Price-Anderson Act's ceiling on liability for nuclear accidents. Still, direct nuclear subsidies last year totaled \$13.8 billion—nearly as much as the total retail revenue from 1984 nuclear output.

In 1982 the U.S. invested twice as much in building nuclear plants, many of which won't even be finished, as it invested in the motor-vehicle, iron and steel industries combined. Surprised we have a Rust Belt?

Now energy at all set expansions of energy supply continued. Of those expansions, more new energy came from sun, wind, water and wood than from oil, gas, coal and uranium. These renewable sources now provide 10% of this nation's total primary energy, and the fastest-growing part, outpaced only by efficiency improvements. Just the increase in renewable energy's annual output during 1979-84 exceeded all Arab oil burned in America last year.

In fact, every dollar spent on slow and costly ways to save oil, like building power plants, retards oil displacement. That dollar can't finance fast, cheap ways to save oil, such as weatherizing buildings and making cars efficient—either of which could eliminate oil imports before a power plant ordered now could deliver any energy whatever, and at a tenth the cost.

Recent terrorist attacks in more than 50 countries confirm that reliance on fragile pipelines, transmission lines and power plants degrades energy security. The Rapid Deployment Force, too, probably

Senator SIMON. We have had cost sharing on hydroelectric, out in the West and I suggest, as we try to clean up—and I have supported acid rain legislation all along, saying we have to move, but we have to do it in a responsible way, so that it is not simply Illinois or Florida or Louisiana, and Connecticut will be one of the beneficiaries. You do not happen to be a high emitting State — but that this cost be borne somewhat by the whole nation, since the whole nation benefits.

Now, precisely how we do it I will leave up to the good judgement of your committee. One of the suggestions that has been made is that we would have a one mil per kilowatt hour additional fee on all consumer bills, all electric bills, over \$50 a month. The average consumer bill, the average consumer pays in electricity \$57 a month.

If you were to have this, which as I understand would amount to about two percent, that would mean the average consumer would pay \$0.14 a month. Obviously, a large consumer would pay more.

That would go, then, to pay for 90 percent of the installation costs of scrubbers or fluidized beds. Ten percent would be picked up by the utility in Illinois, in whatever the State would be, and the maintenance would be picked up by that State.

It seems to me—and I have looked at this thing for some time—that is the fairest approach that we can make in this whole area. Well, some say, well, what about industries that have already gone to the trouble of cleaning up? Well, obviously they are utilities that we are talking about, primarily.

Obviously they have done it, and we applaud them, but we have to face the reality. We have some more problems, and we ought to solve those problems without just devastating certain areas.

If this bill passes as is, Illinois will be hurt. Frankly, Florida and Louisiana are going to be hurt. Connecticut would not be a State that would be hurt.

But I think, ultimately, what hurts Illinois and Florida and Louisiana is going to hurt Connecticut, too. We are one Nation.

That is my message, and I will be happy to answer any questions you have, Mr. Chairman.

Senator LIEBERMAN. Thank you, Senator.

I suppose I will ask the question which is a tough one for us in Connecticut. Our utilities tell me that in Connecticut—and I know they are right—we are paying a higher cost for utility services because over the years, the State has been demanding that they use lower sulphur fuels—higher cost fuels. And they see this as potentially a form of double billing. Why do we have to pay twice?

Senator SIMON. I do not know that much about Connecticut electricity, but do you have any nuclear energy up there?

Senator LIEBERMAN. We do. We actually have four plants.

Senator SIMON. You have four plants? Florida has been paying for your four plants. Louisiana has been paying for your four plants, and Illinois has been.

The subsidy to the nuclear industry is over \$15 billion a year, and we are saying—and I am not opposing that—I am saying some equity in this is in order.

Senator LIEBERMAN. Understood.

We will continue this dialogue.

Senator Graham.

Senator GRAHAM. This is not so much as a question to Senator Simon, but a request to the staff for some analysis of what are comparable rates that are currently being paid by the States, and what proportion of the States would be allocated to current investment in pollution control devices?

The CEO of the Montana company indicated that 35 percent of their recent capital investment has been in the area of pollution control. I would like to get that analyzed on a State by State basis, and how much of utility bills are currently going to this, for the basis on which to go with equity arguments.

Senator LIEBERMAN. That makes good sense.

Senator Breaux.

Senator BREAU. Thank you, Mr. Chairman.

I just want to thank our distinguished colleague for making an appearance this morning.

We talked about the coal from Illinois coming to Louisiana. We would like to consider trading some of our clean natural gas for some of your dirty coal.

Senator SIMON. Well, we are eager to use that coal, and I think there is going to be a great energy market in this Nation for all the energy we can consume.

I think that is one of the points that we have to keep in mind. We are going to need all the energy resources this Nation can use, and we ought to solve this acid rain problem without just devastating certain States.

It so happens that three of the four States that are represented here right now would be among the States that would be harmed, if this were just to go through as is.

Senator BAUCUS. Thank you, Senator Simon, for coming, and for your characteristic eloquence.

Senator SIMON. I thank you very much, Mr. Chairman.

Senator BAUCUS. Thank you.

We will call now the next panel, Dan Dudek, who is an economist with the Environmental Defense Fund; William A. Badger is chairman of the Committee on Electricity of the National Association of Regulatory Utility Commissioners; and George A. Davidson, Jr., is Chairman and CEO of the Consolidated Natural Gas Company, representing the Interstate Natural Gas Association of America and the American Gas Association.

We will begin with Mr. Dudek. Good morning.

STATEMENT OF DANIEL J. DUDEK, SENIOR ECONOMIST, ENVIRONMENTAL DEFENSE FUND

Mr. DUDEK. Good morning.

Mr. Chairman, members of the committee, I am Daniel J. Dudek, senior economist with the Environmental Defense Fund, a national, non-profit organization of economists, scientists and attorneys dedicated to identifying environmental problems and developing solutions.

EDF deeply appreciates the opportunity to testify here today. My professional background and qualifications are presented in my prepared testimony.

With the assistance of Joseph Goffman, senior attorney at EDF, I developed a proposal for a mandatory acid rain reduction program that incorporated strong economic incentives for pollution control in the form of marketable emissions permits. This proposal was submitted to officials of the Bush administration early this year.

This past Sunday I returned from Poland, where I participated in a week-long international workshop with Polish government officials and environmentalists to develop an environmental plan of action for that country.

While we have all been aware of the political events sweeping that country, no less dramatic are changes in environmental awareness.

One of the key recommendations of this group was to create a legal foundation for emissions trading. In addressing the acid rain problem, EDF offers that same recommendation made in Poland.

We at the Environmental Defense Fund believe that title V of President Bush's Clean Air Bill incorporates several crucial elements of the original EDF proposal, and we strongly urge the committee to report acid rain legislation that relies on precisely those elements: namely, ambitious reduction goals, strict enforceable legal mandates, market incentive mechanisms for compliance with those mandates, and an ultimate limit on the emission of acid rain precursors.

In fact, we believe the committee would be well-served if it looked to title V as a whole or in major part as its acid rain markup vehicle. At the same time, however, we understand Senators Mitchell and Baucus are preparing acid rain legislation that will also impose substantial pollution reduction requirements while using marketable permits as a device for tapping the power of economic incentives for pollution control.

We would eagerly support such an approach and its use in committee markup as well.

In our view, the approach embodied in the President's proposal and being considered by Senators Mitchell and Baucus leads to a successful and durable acid rain program, because it is founded on an iron linkage between environmental protection and powerful economic efficiencies. Tamper with this iron bond, and Congress will defeat the goal that it shares with the President of ending the acid rain crisis by the end of the century.

The crucial elements which this iron network comprises are, first, substantial required reductions in sulphur dioxide emissions and emissions of oxides of nitrogen;

Second, strict liability for severe, unavoidable penalties for sources that fail to meet the reduction requirements;

Third, a Nationwide cap on total emissions, once required emissions reductions have been achieved;

And fourth, complete flexibility for sources in the means that they choose for compliance with the reduction requirements.

Such flexibility must include the ability of sources to trade emissions reduction credits, which would be earned by any source that reduced its emissions beyond its reduction requirements to other sources that could use such credits in lieu of onsite reductions.

I would like to address the importance of each of these elements in turn.

Significant emissions reductions: we have heard from Attorney General Abrams, and as we all know, we have been wrestling with the problem of acid rain for over a decade.

While we have learned much, damages to the natural environmental have mounted. Our international relations have suffered, and the United States' image as an environmental leader has been tarnished.

The reductions of sulphur dioxides proposed in the Administration's bill, while credible, are also the minimum that is environmentally acceptable. Nitrogen oxide reductions definitely should be brought forward and strengthened.

Not long ago, EDF published its pathbreaking study on the damages these emissions wreak on coastal waters.

Emissions trading and flexibility for sources: such a program would offer a permanent, least cost solution to the acid rain problem while spurring a number of other environmental and economic benefits.

Since emissions trading will confer an authentic market value on extra emissions reductions—that is, profit for cleanup—the program will induce technological emissions and energy management innovation to tap the potential profit. At the same time emissions trading will maximize flexibility permitting all legitimate methods of producing emissions reductions and will result in the least costly methods of compliance.

This should lower the overall cost of the entire reduction and maintenance program by up to 75 percent.

Nationwide emissions cap: this is the keystone. The cap gives the program environmental and financial guarantees that are critical to the decisions of society and industry. The cap guarantees that the significant emissions reductions produced will be preserved over time, and that the problem will be solved and not shoved off to another day and generation.

The cap also guarantees industry that the value of pollution reduction credits will be preserved. No one would be allowed to seize control of the printing presses for credits by simply building a new plant and increasing emissions.

The cap is a unifying force which ensures that energy production and environmental protection decisions are coordinated and not at cross-purposes.

Thanks to the limit on the Nationwide total of sulphur dioxide emissions, energy efficiency will be called on to play an increasingly important role in the delivery of energy services.

As a result, all the pollutants associated with fossil fuel combustion, including carbon dioxide, will either be reduced or see their growth slowed. The cap elevates energy conservation from a platitude to a potent emissions reduction strategy.

As we look to our future of potential climatic crises, the cap is our best opportunity to begin to make the right thing easy, and the wrong thing difficult.

Senator BAUCUS. Mr. Dudek, let me ask you to summarize, if you could, from here on in, because your five minutes are up.

Mr. DUDEK. Certainly.

I think that in particular I wanted to emphasize the importance of continuous emissions monitoring, in terms of real time

emissions records, strict, unavoidable penalties of the sort that are in title V, \$2,000 a ton plus compensating reductions to settle the environmental account. What source would violate the law when faced with penalties several times the cost of any legitimate control strategy?

In short, we think that policy opportunities like those proposed in the U.S. for acid rain are critical if global atmospheric management costs are to be reduced. Trading is an excellent strategy, since everyone has experience with both trade and the gain it brings.

Trading is ultimately voluntary, so no one need be compelled to participate. Because trading is ultimately built upon a firm regulatory backbone, firms are given the flexibility to compare on-site control strategies with the opportunity to trade as either buyer or seller. Trading links our common self-interest in global habitability.

Thank you for your attention.

Senator BAUCUS. Thank you, Mr. Dudek.

Mr. Badger.

STATEMENT OF WILLIAM A. BADGER, CHAIRMAN, COMMITTEE ON ELECTRICITY, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

Mr. BADGER. Good morning.

Senator BAUCUS. Good morning. Thank you for being here.

Mr. BADGER. Mr. Chairman, I am William Badger. I am a member of the Maryland Public Service Commission, and I also serve as second vice president of the National Association of Regulatory Utility Commissioners, or NARU, and chair the committee on electricity.

I appear today on behalf of NARU. We appreciate the opportunity to be here this morning. My primary purpose is to share with you the results of a survey conducted by the committee on electricity to determine the views of individual State commissions on various acid rain legislative issues.

The results of a 33-State survey prompted the NARUC executive committee, at its July meeting, to adopt a resolution that has been included as a part of my pre-filed statement.

With this background, permit me to identify some of the major issues which regulators appear to support and believe should be considered as you proceed with this debate. Let me summarize the most important.

The majority of the States support the use of emission rates for determining emissions reductions. They favor the averaging of emissions among the utility's intra- and inter-state units.

They favor the use of the credit for conservation as a compliance option. They favor a two-stage compliance requirement. They favor States retaining the discretion to determine the manner of achieving emissions reductions.

They favor emissions trading among utilities units, as well as the intra- and inter-state units.

There are, however, a number of issues which the commissioners believe should not be incorporated into acid rain legislation.

The majority of the States oppose the use of a National subsidy or trust fund to finance control strategies while in excess of 65 percent of the States oppose the use of a trust fund to subsidize capital or operating costs.

Should Congress decide to proceed with the financing of control legislation through the use of a trust fund, the majority of the States oppose the use of general tax funds. They oppose the use of a tax or fee on coal or nuclear generation. They oppose the use of a tax on fossil fuel purchases as an alternative to the trust fund, and I would then turn to the ratemaking issue.

Many of the bills have some impact on the ratemaking process. The majority of the States oppose the use of a trust fund to protect low-income customers or the general residential customer class.

They similarly oppose the intra-state equalization or levelization of rate increases. And they would oppose the use of a trust fund to mitigate rate increases occasioned by fuel switching. And finally, they would oppose mandated compliance through a specific technological means such as scrubbers.

On the assignment of cleanup requirements, electricity rate impacts, I noted earlier that the majority believe that a trust fund should not be utilized. In this regard, some States object to a mandatory contribution to control cost of States with lower average electric rates but higher emissions rates.

Similarly, many States commissions believe that individual States should be responsible for financing their own control strategies, since to do otherwise places them in the unhappy circumstance of not only having already paid for their own control program, but now being required to finance other States as well.

On the issue of coal mining and related employment impacts and their mitigation: it seems very clear that the imposition of billions of dollars of compliance cost on a National economy, with the presence of aggressive foreign competition, may create economic changes which we cannot even begin to predict.

For that reason, the importance of establishing a reasonable emissions level cannot be overemphasized, since if coal suppliers are unable to satisfy such standards, the alternative may only be an expensive technological retrofit.

We need to be cognizant that reasonable emissions levels, all for the prospect, the potential, declining demand for high sulphur coal, and likely adverse economic impacts on regions involved with its production—it follows that as emissions limits become more stringent, a more limited number of suppliers will likely enjoy market power, and may use this power to price energy supplies at levels that approach the alternative cost of technological retrofit.

To mitigate the adverse effects in coal markets, the use of high-sulphur coal should be enhanced through the implementation of an aggressive clean coal technology program.

Let me turn to clean coal for just a moment. It is our position that acid rain legislation should encourage the development of CCTs. However, having said that, we strongly oppose DOE and other legislative incentive proposals, which in our opinion incorrectly presume that the present regulatory process operates as an impediment to the development of clean coal projects.

These proposals include the granting of full cash return on CWIP, the incentive cost to capital, accelerated depreciation, and protection from prudence reviews.

With respect to non-utility sources emissions, NARUC does not favor legislation which only singles out electric utilities as a sole source of all emissions reductions. It is hardly equitable for one category of sources to be required to bear the entire burden of the Nation's efforts to address this problem, while other sources escape responsibility for the cost of reducing their emissions.

I would like to spend just a moment talking about emissions trading, because there has been some discussion about this.

The survey that we conducted makes it very clear that over 94 percent of the States favor an emissions trading program. We are, however, concerned about the administration proposal which assumes that such allowances will be freely tradeable once utilities create enough of these allowances to support a market in which the builders of new fossil base capacity can obtain needed allowances at a reasonable cost.

We respectfully disagree with these assumptions. There is a serious question that such a market can develop because of the manner in which the emission credits are computed with reference to the emission cap. The use of a cap, I would suggest to you, would create a strong incentive for State commissions to direct utilities to retain such credits, to accommodate future economic growth within the utility system.

In addition, and most important, regulators would ensure that utility purchasers of emissions credits pay no more than the cost of alternative methods of compliances—that is, the avoided cost of the control strategy.

We believe it is important that the States have the complete authority to determine the extent to which such credits will be created, as well as to decide issues relating to their transferability. As you consider the design of a trading system, it should recognize the difficult issues associated with implementing this kind of concept.

For example, our Nation's energy requirements for the large part are provided through a highly coordinated power pool system. These systems today operate on a purely economic dispatch basis, with loading that may change every 60 to 90 seconds. Thus, it seems clear that such systems will have to be re-examined and possibly restructured to provide for a balance of economic as well as environmental concerns.

Senator BAUCUS. Can I ask you to summarize the rest of your testimony?

Mr. BADGER. That completes my testimony, and I thank you very much.

Senator BAUCUS. Good timing.

You read some very provocative questions at the end, certainly, which I want to get back to.

Mr. Davidson, welcome. We look forward to your testimony.

**STATEMENT OF GEORGE A. DAVIDSON, JR., CHAIRMAN AND CEO,
CONSOLIDATED NATURAL GAS CO., REPRESENTING INTER-
STATE NATURAL GAS ASSOCIATION OF AMERICA AND AMERI-
CAN GAS ASSOCIATION, ACCOMPANIED BY STEVEN E. WIN-
BERG, MANAGER, COFIRING MARKET DEVELOPMENT, CON-
SOLIDATED NATURAL GAS, PITTSBURGH**

Mr. DAVIDSON. Thank you, Mr. Chairman, members of the subcommittee. I am George Davidson, chairman and CEO of Consolidated Natural Gas Company.

With me today is Mr. Steven Winberg from Consolidated, who is our manager of cofiring market development.

I am pleased to be here today to speak on behalf of the American Gas Association and the Interstate Natural Gas Association.

I have submitted for the record rather lengthy and detailed testimony, and with the Chair's indulgence, my brief remarks will emphasize for this panel the most important points made in my written testimony.

Our industry supports title V of S. 1490, the Administration's acid rain legislation. And while there has not been time to examine in detail and comment upon the most recent Senate bill, based on the summaries we have seen, it has most of the feature that we can support.

My written testimony outlines how natural gas can contribute to solving acid rain problems, and this includes natural gas cofiring, the refitting of boilers to burn natural gas, the seasonal use of gas and the installation of gas-fired turbines.

However, I would like to stress to you today that this contribution can be maximized only if the legislation which ultimately becomes law permits State and utilities some flexibility in choosing ways to meet emissions goals and does not in fact or in effect mandate scrubbers.

Flexibility can allow States and utilities to choose the most cost-effective way to meet emissions standards. Electric utilities can avoid premature retirements of existing coal-burning facilities, and they can reduce the huge capital cost burden that they and their rate payers will otherwise bear.

Flexibility will allow room for the continued development of attractive new technologies, including certain gas technologies that control nitrogen oxides as well as sulphur oxides.

Mandated scrubbers will discourage new technology development.

Flexibility can allow standards to be met without throwing coal miners out of work, and without the devastating impact that this would have on our coal mining communities.

As chairman of Consolidated, I come to the acid rain issue with several perspectives. Although based on Pittsburgh, Consolidated is a large natural gas producer, and we have a big economic stake in the Gulf of Mexico, the Southwest and the West.

But we also are a large natural gas utility system, selling gas to communities in Ohio, southwestern Pennsylvania and West Virginia, much of this in the heart of the coal country, so we have a big economic stake in the health of the coal communities, too.

And moreover, we are the wholesale pipeline supplier of most of the gas used in Upstate New York, and we sell into New England the areas most affected by acid rain.

Clearly we have an economic interest at every end of this problem, and we are looking for solutions where everybody comes out a winner.

Natural gas cofiring, which my company pioneered, is one such solution. It burns gas alongside coal in coal boilers, achieving significant reductions in sulphur and nitrogen pollutants with very low capital cost and very short lead times, without disrupting existing coal usage.

Cofiring is not the only answer to acid rain, but in many of our existing electric utility plants, it is the best answer. In basic cofiring, gas is burned at rates ranging from five to 20 percent of the total fuel used. A demonstration project in Pittsburgh supported by the Duquesne Light Company and the Gas Research Institute, we reduced SO_x and NO_x emissions by 12 percent and 25 percent respectively by burning between four and nine percent natural gas alongside coal.

A newer cofiring process called reburn can take advantage of the chemical properties of natural gas to reduce nitrogen oxide emissions by as much as 60 percent. Further down the road, but not far away, are other gas and coal using technologies being developed which can simultaneously reduce both SO_x and NO_x by as much as 95 percent.

These are all technologies that are nearly developed, and they should not be choked off by inflexible legislation. For these reasons, we hope that the eventual legislation will allow utilities and States to choose the appropriate sulphur dioxide control measures, and not arbitrarily mandate the installation of scrubbers, or create such low emission rates for legislatively-specified plants that scrubbers become the only option.

We hope it will allow emissions trading, giving States and utilities the ability to achieve reduction targets on a system-wide, State-wide or regional basis, rather than requiring each plant to meet a specific emission rate.

Allow emission reductions to be achieved on an annual basis, rather than on a continuous or monthly basis, and recognize nitrogen oxide and sulphur dioxide trading as part of the acid rain control program.

If all that occurs, there will be many winners. We can meet strict environmental standards, and we can do so to the advantage of the coal industry and the regions of the country that depend on coal, the gas industry and the regions of the country that depend on gas, the electric utilities and the ratepayers and all of us through cleaner air and an end to acid rain. Most importantly, flexibility will encourage development of promising new technologies that will simultaneously control nitrogen oxide and sulphur dioxide—something that scrubbers could not achieve.

Thank you very much.

Senator BAUCUS. Thank you very much, gentlemen.

Mr. Dudek, in your written testimony you referred to technical problems which in your view crippled EPA's bubble policy and produced a record of mixed failures and successes.

I would like to know what those technical problems were, and how they could be avoided under an acid rain strategy that uses emissions trading.

Mr. DUDEK. Basically, Senator, I think they fell into two areas. They related to the determination of baselines, and since the original emissions trading policy was developed to satisfy the needs of the non-attainment areas, and it was targeted at industrial sources in those non-attainment areas for which we have poor existing information concerning their emissions.

Now, when the trading baseline was set, those sources an allowable emissions limit above their actual emissions. They had an incentive then to move up to their allowable emissions limit.

The first result, then, was an increase in emissions which environmentalists, opposed in court, and elsewhere, thus succeeding in creating legal uncertainties surrounding the operation of this particular program.

Secondly, on-site monitoring was extremely difficult from the standpoint of verifying what each one of these individual sources were doing, and what their emission reduction credits were.

Now, in the proposal as submitted by EDF to the Administration and to a large extent incorporated within title V, we have very reliable baselines established. These are predicated on historical fuel use, in the case of affected sources in the proposed Phase I and Phase II, times a corresponding rate of emissions.

Secondly, from the standpoint of knowing what each source is doing with respect to emissions, there would be a system of continuous emissions monitors required that would allow the EPA to know what emissions were at virtually any point in time. This transforms the problem into a fairly simple one, very much like balancing a checkbook, of reconciling what the allowance of a particular source is with what it has actually done, and then determining if it engaged in purchases or sales of emission reductions.

Senator BAUCUS. Did you hear the testimony of Paul Schmechel of the Montana Power Company? He was very concerned that utilities would not be able to get any offsets. Those that get the credits or reduce their emissions and get the credits will bank them, keep them, and will not sell them to other areas that want to grow.

What is your response to that?

Mr. DUDEK. I think there are several observations, Senator. First, as we have had alusion made to the OPEC experience, the lesson we learned there was that economic growth does not necessarily require emissions growth. So, there are a whole host of underlying opportunities, including energy efficiency, which can be promoted to meet the energy demands and needs of growing regions.

Secondly, I think that it is exactly these points which emphasize the importance of robust trading across regions. If you look at the Administration's own analysis, it indicates that if trading were constrained, we would have costs as much as 60 percent higher associated with this program.

I think that the national emissions cap is exactly that: it is National in scope. It is not based on State levels. Sources would be able to find compensating, offsetting reductions anywhere in the United States, and this would include cost-effective industrial trading as available.

We also—

Senator BAUCUS. But the basic question is, what is to prevent a utility from not wanting to sell its allowances, but bank it for its own use?

Mr. DUDEK. Again, I think that as Mr. Badger has testified, PUCs will have a very strong role in guaranteeing future energy services as well as minimizing the rate impacts on ratepayers.

If in fact all market—

Senator BAUCUS. But did not Mr. Badger say he thought they would bank?

Mr. DUDEK. Yes, he did, in fact. Yes, and he said he thought that those would be restricted to an in-State basis, according to a survey of his membership.

Now, if in fact market participants, including States and PUCs believe that they will not use the marketplace that they all claim they wish to have, then I think it is the responsibility of the Congress to institute a program of reserving some of those allowances—let us say, for example, five percent on an annual basis—and then auctioning them out.

That certainly would stimulate the market and allay any fears of sources in having access to available supplies of offsets.

Senator BAUCUS. This approach has a lot of theoretical appeal. How much time did you spend talking with and getting the opinions of utility CEOs to try to determine the practical effect, as opposed to the theoretical?

I ask the question because I understand that when the several utilities tried to explain to the Administration, that this may sound good in theory, but as a practical matter it is not going to work as well as it sounds, that those entreaties fell on deaf ears. There is no good faith interchange to try and figure out whether this is going to work or not.

So I am asking you for your evidence. Give us a flavor of how well you have tried to determine the practical effects by talking to people whose business it is dealing with all of this, as opposed to the theoretical.

Mr. DUDEK. Absolutely.

I have in fact met with representatives of Montana Power and Light as recently as about six weeks ago, in Idaho.

We have been consistently attempting to speak with utilities, both privately and publicly, and up until May, we were completely locked out of that process. The utilities were largely in a mode of "hell, no, we won't go, we don't want acid rain legislation, we don't think that anything is necessarily going to happen."

And it was not until the President in his initiative changed drastically the political terrain surrounding the probability of clean air legislation that we have had large and open access to utilities, and we have been exploiting that at every available opportunity.

Senator BAUCUS. My time is up. I will have more questions.

Senator LIEBERMAN. Thank you, Mr. Chairman.

Let me pick up your line of questioning, because obviously, Mr. Dudek, you are the creator of this idea, or at least the leading advocate of it, and it takes us all into a brave new world.

I find it very refreshing, and I think that all of us want to have some sense of confidence as we go forward.

Let me ask you this baseline question, which some have asked us. What is the nature of the right which a utility would have, for instance, in one of these emission allowance permits? Is it a property right?

What if, for instance, the Government, five years after the system started, decided to reduce the number of permits out there? Would we have to compensate the utilities in getting them back?

Mr. DUDEK. I think not. I think that the permits, instead of being a property right to pollute instead are an obligation to produce emissions reductions, because they establish on the basis of the baseline compared with current emissions, what that individual source is responsible for producing in the way of emissions reductions.

Now, coupled with that is the freedom to decide how, in fact, it is going to produce those reductions.

Senator LIEBERMAN. Let me pick up on something you said in response to one of the Chairman's questions. All of us have heard these fears about the potential for hoarding of the permits, and again we are speculating on behavior, because we are entering a new world, if this is adopted.

You mentioned earlier that if that indeed happened, the Government might want to take action, for instance, to issue additional permits.

Would you suggest that we put that power, that authority, into the initial legislation, that some governmental agency have the authority to issue additional permits to free up the market?

Mr. DUDEK. I would suggest that that authority be included, but I would not suggest that authority be included in a way which allowed, in a discretionary sense, an agency to issue, to print more credits.

Rather, since these permits are issued on an annual basis, the agency should be empowered—for example, the EPA—to withhold some percentage of the distribution that it is making freely of those allowances. I gave the example of five percent.

This amount, for example, on an annual basis over the second phase of the program, if it accrued, could amount to over 1 million tons of emissions as a pool, which then could be available for independent power producers and others who are concerned about the anti-competitive effects of such a system.

Senator LIEBERMAN. Okay.

Mr. Badger, just continuing on this point, let me read to you from some testimony which will be delivered by Mr. Walbridge from Seminole Electric Cooperative as part of the next panel, and ask you to react to it.

"The imperative underlying assumption required for the allowance system workability is that free market forces would not only prevent the hoarding of allowances, but would encourage their sale."

That is what we are talking about here.

We question how this free market concept could operate in a market that is not free. State and public utility commissions representing State and local interests could and would likely dictate alternative for the regulated utility other than those following free market behavior.

What is your reaction to that?

Mr. BADGER. The difficulty I have, I guess, is with this generic term "market driven."

I am not so sure that a market can evolve for this for a couple of reasons. First of all, I think it should be remembered that the very plants that give rise to these credits have been placed to the rate payers through, very often, a seven month rate process, through evidentiary hearings, for which just and reasonable rates have been established by a commission.

Therefore, when you take that, coupled with the only reason there is a potential value is because of the cap. It is the cap that gives that value—gives rise to it.

Considering that a utility company, in exchange for the right to serve territory, is obligated to provide adequate and reliable service, just as the commissioners are required to carry out that mandate, it seems to me that the first obligation belongs to the States for which these utilities are located, or part of a multi-State system, to first carry out those responsibilities to the ratepayers which have paid for that particular property.

I have some other problems suggesting that this is a property right that is freely transferable.

If you think about it for a moment, as one commissioner, I would be hard-pressed, again because of the nature of the cap provision, to say that because these credits are there, that they should be permitted to be exchanged with another State for value. I can almost assure you that the other State, examining the reasonableness of that purchase will examine what the avoided cost would have been should that utility company undertake their own control strategy.

So I do not see these huge profits being capable of being derived from this process. It is going to be that option that rests with the State that is required to undertake that particular control strategy.

I have had a very good relationship with EPA through the years, and I would respectfully suggest that the means to control these allowances should not be vested with the States, because to meet their obligation, they are closer to the circumstances, dealing with the problems with the utilities, and let that process evolve at that level.

Senator LIEBERMAN. That is an interesting answer, and I hear it in some senses reinforcing the concerns of the statement that I read, that the State regulatory commissions may act in a way—I understand we are using terms loosely here—but may act in a way that is contrary to the notion of the free market here, to protect the ratepayers in those States.

Mr. BADGER. I do not want that to sound like anything evil.

Senator LIEBERMAN. No, it is not. It is just that it is important for us to consider, as we consider the viability of the proposal.

Mr. BADGER. Once—I think that we have one State, or more than one State—States that have had the opportunity and reduced emissions through the years are going to be confronted with very limited choices of how to accommodate new growth, and they have either got to continue to reduce the emissions because of the cap—that is going to create avoided cost.

But I cannot imagine—let us take Florida. If they are down to 0.6 pound, and they have got to get below that to build a plant to

accommodate the industrial growth of that State, they are going to look at the cost of reducing those emissions versus buying that credit, and that credit to me has got to approach the avoided cost of the methodology in the State affected by the control methodology.

So yes, if you want to think of them as having immense values, indeed they might. But I do not think reasonable regulatory bodies or State commissions should use that concept and not deal with the concept of avoided cost.

Senator LIEBERMAN. My time is more than up on this round.

Senator Breaux.

Senator BREAUX. Thank you, Mr. Chairman, and I thank all the members of the panel for their presentations.

I would like to make a comment, Mr. Chairman, about some of the testimony from our colleague Senator Simon from Illinois. I did not have the information in front of me, but when he was talking about cost sharing, and that some States should not object to participating in this National program—the statistics on the amount of SO₂ emissions from the various States compiled by EPA says that Illinois was averaging 2.7 million pounds emissions of SO₂ per BTU—2.7. Louisiana, for instances, is 0.1. Now, your State of Connecticut is 0.5, and the Chairman, from Montana, is 0.7.

The point is that some States have already done quite a lot of reduction of SO₂ because of using alternative fuels like natural gas or like clean-burning coal, or like cofiring coal and natural gas together, and they have done that at a great expense already, that has not been cost-shared.

So now we are talking about other States coming down to 1.2, or whatever the standard is in the bill—some States have already done that, and have done it essentially at their own expense, the expense of their consumers.

Mr. Davidson, with regard to your testimony, I was very interested in some of your positions.

My basic position is that when we are trying to clean up the air, we should not be subsidizing the burning of dirty coal if there are clean alternatives to that, and your testimony, obviously representing the gas industry's position—this is all so much *deja vu*.

In 1978, we as a Congress—as you point out in your testimony—made a decision to go for coal, to the exclusion of natural gas, which was the cleanest burning fuel. That was a terrible decision, and the point that we have to be careful of in this legislation is not to make the same mistake again to exclude some type of fuel. It has got to be a mix, if it is going to be anything.

I think the flexibility that you talked about is very, very important.

Give me some indication between the relative expense of using scrubbers to burn dirty coal, from a cost standpoint, versus the use of, say, natural gas, alone as a generator or through cofiring with coal.

Mr. DAVIDSON. We think cofiring is very effective, Senator.

The installed costs for cofiring that we have experienced run between two and five dollars per kilowatt, and you can compare that with \$200 to \$500 per kilowatt for scrubbers. It is a very quick, front-end adjustment.

Even going to the reburn technique that I mentioned that would remove up to 60 percent of the sulphur oxides, we are only talking installed costs of \$15 to \$30 per kilowatt.

Senator BREAU. Those are tremendous number differences. But is there anything that we are talking about legislatively that would prevent that type of procedure from being put into place, with regard to the emissions standards that we are setting in here? I think we ought to have that flexibility. I feel very strongly about it, but I am concerned about some of the emissions standards that perhaps might cause problems with that.

Mr. DAVIDSON. Well, we are concerned, too. In fact, one of the concerns is the fact that we may mandate for selected plants such low levels of emissions that it would almost dictate the installation of scrubbers. We do not think that is necessarily a good economic situation.

I think freedom of choice, a level playing field, if you will, between technologies and fuels is what we are looking for out of any legislation that comes out, and let the market decide what is the most efficient way to comply with emissions standards.

Senator BREAU. I take it some plants are not going to be able to use gas technology, or is it possible?

Mr. DAVIDSON. Natural gas, in my vernacular, is not the chicken soup that is going to solve the environmental situation, but I think used selectively in certain installations, it can enhance the situation, particularly older coal-burning plants—a plant with a remaining life of 10 years, which would become uneconomic if we had to install scrubbers, or take other action, can be retrofitted very easily for cofiring and remain in operation.

I think with the power needs of our country, and looking at the future, we want to keep these older plants operating, and I look at natural gas as somewhat like an octane enhancing additive to fuel. It just takes a little bit, used selectively, to enhance the entire operation, and that is really the theory on cofiring.

Senator BREAU. One of the driving forces behind the great mistake of 1978, the Fuel Use Act, was the fact that we were running out of natural gas, and therefore we had to get off of gas and mandate the burning of coal. What is the situation on the supply today?

Mr. DAVIDSON. Well, what I think we need is a market pull. I do not want to talk about the natural gas bubble, because I think any extreme situation is not indicative of the future.

I think the Department of Energy study that was issued in May of 1988 made it very clear that at prices under \$3.00 at the well-head, we had a 35-year supply of natural gas, and as prices went up, we could enhance that further.

I think the supply situation is manageable. I think we still have to realize that natural gas is a clean-burning, premium fuel, but I think the selective use of natural gas can really make a difference, and it should be a player in the environmental situation, Senator.

Senator BREAU. I was going to ask you a question about your thoughts on natural gas fees, but I see that my time is up, so I probably will not ask that question.

Senator BAUCUS. Thank you very much, Senator.

Mr. Dudek, I know this is going to take a little more time, but this is a very important point, and that is the allowance system, how it is going to work or not work.

Could you just start from the beginning, and run through, step by step, the actions that a utility chief executive must take in trying to determine whether to, say, reduce emissions or buy a certificate which lets the utility emit more?

For example, you are utility, it is a very basic, fundamental question you face: what to do? So where do you go? How do you find out what is available, how much you can buy? And what prices? And for how long, over what period of time?

These are very basic decisions. There are investors and rate payers and public utility commissions that are going to be looking over your shoulder as you try to answer those questions. So, just on a step by step basis, where do you go? What do you do? Walk us through what you as a utility president would do to answer that question whether to reduce or whether to try to buy a certificate.

Mr. DUDEK. Certainly.

I think that the first thing I would do, Mr. Chairman, is look at home. I would look first to my existing portfolio of plants. I would look at the sources that I have, what their current emissions are, and secondly, given the allowances that will be issued for each one of those plants, what reductions I will be required to produce at each one of those locations.

Now, given the flexibility in the system, I know that for my utility as a whole, all I am required to produce is the total reduction which is the sum across those plants, because I am able to move reductions between plants to meet the aggregate obligation.

Each one of those plants is going to have a different set of opportunities for either substitution of fuel, a retrofit of technology, the possibility even of shutdown with the replacement of a new, more modern, less emitting and polluting facility.

All of these are going to provide me with opportunities to—

Senator BAUCUS. That is the theory, but let's get into the practice. Where do I go to find out how much a certificate might be worth? Where do I go?

Mr. DUDEK. This is part of how this works, is to understand first that one looks at home to your sources, and you determine by looking at each one of those operations what it is going to cost you, ultimately, for that next unit.

Senator BAUCUS. All right, we've done that. Next step.

Mr. DUDEK. Next step is, that gives you your reservation price, because you know that you can produce the additional reduction at your location for, let us say, \$500 or even \$1,000 a ton.

Senator BAUCUS. Okay, that. What is next?

Mr. DUDEK. Within the first phase, you are allowed to negotiate on a bilateral basis with neighboring utilities. So let us say you approach the neighbor within your State. You say, "Look, my costs are all of a sudden going to jump if I have to produce these extra reductions. I may also want to produce a little extra to keep in a bank, because I am going to use that to meet any variations in my operations, so as to achieve compliance with this law. Do you have any opportunities that we could cooperate together?"

Pollution control investments tend to be lumpy. These credits can also be leased—they do not necessarily have to be sold in perpetuity. When I put a scrubber on, for example, I am going to get a large increment of reduction, so we can engage in a contract which would allow for cost-sharing between both parties: the flow of funds on one hand in exchange for the emissions reductions on the other.

In the second phase of the program, as we move into a fully interstate system with industrials allowed to come in, with virtually anyone allowed to own these certificates, we can have the development, as we have in nonattainment areas, of emissions trading brokers, whose job it is to provide the information for utilities or others requiring or needing these certificates.

Senator BAUCUS. Do you have a view of whether it is better to have a 106 plant reduction or a 20 plant reduction in the first phase?

Mr. DUDEK. I think that in the first phase, the maximum possible number of sources ought to be included. The original EDF proposal submitted to the administration had virtually all sources within the program. That way, we get the maximum encouragement to the market.

Senator BAUCUS. Others yesterday testified just the opposite—that is, that with, say, 20 plants, there is more certainty and more enforceability, you could manage it more easily, and also, theoretically, the reductions would be great.

Therefore, on a marginal basis, there is more to work with.

Mr. DUDEK. I think that when one has a larger number of sources, it will give maximum stimulus to the market, and that gives people the most incentive to make excess reductions to get those SO₂ emissions out of the air sooner and faster, even if they are banked and not traded.

Senator BAUCUS. Mr. Badger.

Mr. BADGER. Mr. Chairman, could I just comment on the first part of your question?

Senator BAUCUS. Sure.

Mr. BADGER. NARUC believes that it is very important not to lose sight of how these credits arise, and therefore, we believe that any acid rain legislation should require the following of a State plan. That plan would be where the commissioners, in concert with the utilities, attempts to develop this concept of trading, how they envision it within the companies that exist in that State as well as the multi-state companies.

Now, it seems to me that there is one reason to have banking, and we certainly do not want to create a situation in which commissions might be unreasonably using their authority over utilities to arbitrarily preclude the transfer of these permits.

But on the other hand, if the States have the initial responsibility for determining this, you could always have EPA serve as an appeal authority to handle any situation of the aggrieved. So I guess we would just respectfully urge to you that you keep in mind that it is the States that have the unique situation.

Senator BAUCUS. Well, I hear you, but it seems that two questions come to mind. One is that that might encourage further delay—it is another complication in this whole system.

Second, how would, say, New York and Louisiana be able to trade, if each State is trying to set up its own system of planning?

Mr. BADGER. Well, I just think——

Senator BAUCUS. One State does not have jurisdiction over the other State.

Mr. BADGER. No, they don't. I agree with what the gentleman said about you start at home first. But I just think there are appropriate checks and balances, if you fear that a State commission might arbitrarily misuse its authority. There are checks and balances that could be put in place.

Senator BAUCUS. My time is up.

Senator Lieberman.

Senator LIEBERMAN. Thank you, Mr. Chairman.

I do want to get back to this in a minute, but first I would like to address a question to Mr. Davidson.

May I say to you, I admire the role your company has played in the development of the natural gas cofiring technology. It is a real contribution to the alleviation of the problem that we are all concerned about.

Somewhat in that regard, let me just ask you what the position of the gas industry is toward cost sharing, the concept of cost sharing is one of the main themes that runs through this debate.

Mr. DAVIDSON. I think that the position is not pro or con cost sharing, necessarily. I think it focuses on the mechanics.

There are a couple of areas. For example, if the form of cost sharing ends up to be a subsidy, which essentially might make it very attractive to make heavy capital investment—while not mandating scrubbing, would certainly encourage scrubbing, because it would be subsidized—we are against that type of cost sharing because it does take away freedom of choice and it causes other problems.

Essentially, also, if it is implemented by a tax on generate electricity, we would have a real problem with the tax on electricity generated on natural gas, which essentially does not emit any sulphur oxides. So we think there can be some inequities, but on the major cost sharing issue, it is not one that we take a position on.

We realize that we are groping for an equitable solution to this Nation's problems. I think our concerns are more with the mechanics of the cost sharing.

Senator LIEBERMAN. I appreciate your answer. Obviously I have a point of view on this, but I do think your answer makes a good point, which is that cost sharing indirectly can reduce the flexibility, the freedom of choice that utilities have, and in that sense, hurt the goals of the bill.

Mr. Dudek, let me come back and ask you if you would respond to the earlier quote that I read, and the testimony of Mr. Badger, which suggests that the utility commissions might actually, acting in good faith and really pursuant to their own statutory purpose to protect ratepayers, might intervene in the free market that we contemplate of these emissions permits, make it less free, and therefore undercut the whole system.

Mr. DUDEK. Well, I guess I would respond, Senator, by first saying that although public utility commissioners may perceive their interests narrowly, and may act in a way to circumscribe the

market, I think that it is unlikely that public utility commissions would go about recreating each one of their States as separate little Japans.

The situation that we have in terms of international trade is exactly analogous to what we have within the States and within this emissions trading program. If States act unilaterally to restrict trading, they will only drive up costs to their ratepayers.

We heard before the example of the fact that most of these utilities are already engaged in power pooling arrangements. Now, in this system of allowances, power and emissions are fungible. If you trade power across State lines, you are also simultaneously trading emissions, and it is very easy—in fact, quite simple, I believe—since both dispatching issues and trading issues are predicated upon the economic costs of power production. Now the economic costs of production are going to include sulphur dioxide and nitrogen oxide costs as well.

So this simply will be dealing with a different set of costs when these decisions are made, but they are going to have to be dealt with nonetheless because we do have an integrated power system.

Senator LIEBERMAN. Just to get under the concept, I will read you another quote from Mr. Walbridge, a question really.

This is to get at what we are speculating at would be natural behavior here: "Why would a utility sell any allowances at present market price when the total number of allowances is forever constant, with their future value almost certain to increase, likely substantially so?"

Mr. DUDEK. Actually, Senator, first, I think the total number of allowances is not fixed. What is fixed in the system is in fact the total number of emissions.

Because allowances—I think one has to differentiate between allowances and excess emission reduction credit. These are the reductions that go beyond the allowances. The allowances are the minimum established under the law.

Now, if at any time in the program a source goes beyond that minimum, generating an extra reduction through the banking provisions, it can store that ton of reductions and use it at a later time. It is through the operation of the cap that allows us to engage in this preservation of credits as they are generated.

Similarly, from the shut-downs of old plants, those credits would exist in perpetuity. So it is extremely difficult to predict the total quantity of credits that would be available in the system at any one point in time, and they are clearly not fixed.

They are limited only by the fact that we have a total quantity of discharges. After a full reduction program, we would still have over 13 million tons of SO_2 being discharged in the atmosphere which is available for reduction.

Now, consider tapping into that as an additional source of offsets.

Senator LIEBERMAN. Okay, my time is up.

Senator BREAUX. A point or two. One of the arguments that we have heard with regard to using alternative fuels to high sulphur burning coal is the impact that it would have on the mining industry and particularly the loss of potential jobs in the mining industry.

I do not remember hearing many of those arguments when we passed the 1978 Fuel Use Act about what it would do to those who worked in the gas industry, but be that as it may.

I take it that your point, Mr. Davidson, is that with cofiring, the blending of natural gas and coal, you really continue to use coal in amounts that would not cause that much of a negative effect on the coal industry, and yet potentially create additional new jobs.

Would you care to elaborate on that?

Mr. DAVIDSON. Yes, Senator.

It would have a very positive effect, of course, upon employment in the natural gas industry. We have had some studies done that show increasing gas usage between 200 billion cubic feet a year and 750 billion cubic feet a year could add between 12,000 and 45,000 jobs.

But importantly, and what we have discovered at Cheswick and at our other cofiring applications is that we are not reducing the amount of high sulphur coal used. The fact that we are blending right now between five and 12 percent natural gas with coal is not resulting in an equivalent reduction in the coal usage.

What we are finding is that these older coal-fired plants can operate within limitations more hours per year and more hours per month. So we are getting greater utilization from those coal-fired facilities.

It is a unique win-win situation with these marginal coal plants, and they are actually operating more hours per year, and with more flexibility. So we think it is a very positive situation, and I think it has been accepted in our operating area.

Senator BREAU. Thank you, Mr. Chairman. Thank you, panel members.

Senator BAUCUS. Thank you all, gentlemen, very much. We appreciate your testimony today. It was very helpful.

The next panel includes Mr. William Walbridge, executive vice president of Seminole Electric Cooperative; he is representing the National Rural Electric Cooperative Association.

Mr. William Cornelius is the chief executive officer of Union Electric, representing Edison Electric Institute in St. Louis.

Mr. Nicholas Koskores is the president of the New England Council, and Mr. John Arlidge is senior vice president of Nevada Power Company on behalf of the Western Regional Council of Las Vegas.

Mr. Walbridge.

STATEMENT OF WILLIAM WALBRIDGE, EXECUTIVE VICE PRESIDENT, SEMINOLE ELECTRIC COOPERATIVE, REPRESENTING NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

Mr. WALBRIDGE. Thank you, and good morning, Mr. Chairman.

On behalf of the National Rural Electric Cooperative Association, the NRECA, I do appreciate this opportunity to present testimony on proposals to amend the Clean Air Act.

I am William Walbridge, executive vice president of Seminole Electric Cooperative, which is located in Tampa, Florida, and I serve as chairman of NRECA's executive task force, which was es-

tablished to identify and address issues of major concern regarding clean air and acid rain control.

The NRECA member systems have already invested heavily in pollution control equipment under current Clean Air Act requirements. We support cost effective amendments to the Clean Air Act, and today my testimony will focus on certain principles for additional SO₂ and nitrogen oxide controls from the Nation's fossil fuel generating units that the Rural Electric Cooperatives feel are important.

The first principle, we feel strongly that an electric generation tax should not be levied to fund pollution control costs on selected utilities.

Mr. Chairman, in the aggregate, the Rural Electric Cooperative coal-fired generation facilities are 44 percent scrubbed. My own utility, Seminole Electric, has units that are 100 percent scrubbed.

I point this out not because the Rural Electric Cooperatives are seeking special recognition, but rather that we feel that all electric utilities, whether cooperatively owned or not, that have already paid a very hefty price for their pollution control equipment should receive just credit for that investment.

We feel imposing no new taxes on electrical generation is a major step in crediting clean utilities for the existing and expensive SO₂ control equipment they have installed. We commend both the Administration officials and Senators Mitchell and Baucus for advocating this equitable approach.

Furthermore, we feel that any additional pollution control should be cost effective. We believe strongly that prudent public policy dictates that these additional controls must be based on a cost-effective strategy. The less new acid rain control program costs the Nation's electric consumers, the better we all will be.

Cost effective National strategies, I think, need to include one, individual utility flexibility to select the optimal method of SO₂ reduction; two, emissions averaging and emissions trading on an inter-utility and interstate basis, avoiding costly source by source or unit by unit requirements; and thirdly, compliance deadlines that will provide for the maximum utilization of new economic pollution control technologies.

I would like to address the matter of emission caps on future units. The Greenfield cap, as it has been referred to—we feel the Greenfield cap does lack National energy policy and electric reliability considerations. Both S. 1490 and the Mitchell-Baucus proposal, as we understand it, would prohibit the operation on or after the year 2000 of new units that are built after legislative enactment, unless SO₂ allowances are purchased from owners of old units.

We understand the underlying major objective of this Greenfield cap is to ensure that overall sulphur oxide reduction targets, once achieved, will not be ameliorated by growth of SO₂ emissions inventory because of new units yet to be built.

We appreciate this concern, but we think that it is overstated, particularly in view of a new generation of coal combustion technologies on the horizon, such as combined cycle coal gasification processes capable of greater than 95 percent SO₂ removal.

We believe that there are other overriding public policy considerations, such as providing adequate electric service. We believe the Greenfield cap is a questionable environmental policy and a potentially disastrous National energy policy.

The Greenfield cap is a questionable environmental policy because it would reward the Nation's heavy polluters by granting them valuable SO₂ allowances or property rights. These property rights would be severely restricted if not completely denied to the clean utilities.

Our second concern is whether the Greenfield cap as proposed would present onerous National energy policy implications. The imperative underlying assumption required for the allowance system workability is that free market forces would not only prevent the hoarding of allowances, but would encourage their sale.

We question how this free market concept could operate in a market that is really not truly free. State public utility commissions representing State and local interests could and likely would dictate alternatives for the regulated utility other than those of following free market behavior.

Furthermore, what are the assurances, even in a free market, that utilities initially receiving these allowances would not bank them or hoard them? If the allowance market does not operate freely, as we suspect, what are the energy implications for a utility not having any or many allowances? What would be the energy alternatives available, and at what price?

As a utility executive, can I provide my customers with adequate electric power under the Greenfield cap? I seriously doubt it.

I would strongly urge the members of this subcommittee and other Members of Congress to examine these very important Greenfield cap issues very carefully. I believe the proposal goes far beyond establishing environmental policies. It really would create a major new energy policy as well.

I would like to thank you, Mr. Chairman, for the opportunity to testify on this important subject of clean air. The Rural Electric Cooperatives want to do as much as we reasonably and possibly can to assist in the National goal for cleaner air.

I would be happy to answer any questions that you or other members of the committee might have.

Senator BAUCUS. Thank you, Mr. Walbridge, very much.

Mr. Cornelius.

STATEMENT OF WILLIAM CORNELIUS, CHIEF EXECUTIVE OFFICER, UNION ELECTRIC CO., REPRESENTING EDISON ELECTRIC INSTITUTE

Mr. CORNELIUS. I thank you, Mr. Chairman.

My name is William E. Cornelius. I am chairman and Chief Executive Officer of Union Electric Company, headquartered in St. Louis.

I am appearing today on behalf of the Edison Electric Institute, the association of electric companies.

I have a few brief comments about the industry's concern with various acid rain control bills that contain provisions similar to those in S. 1490, the Administration's bill.

Mr. Chairman, we are proud of the industry's effort in accomplishing the goals of the Clean Air Act. Utility sulphur dioxide emissions have been reduced by over 8 million tons, despite the increased use of coal.

The industry currently is spending \$43 billion a year for air pollution control alone, and we estimate that the Administration's bill would cost the Nation an additional \$5.5 billion annually by the year 2000, and then increase to about \$7 billion a year after that.

Some systems would experience rate increases in excess of 20 percent, and much of this burden will be placed on industry. This will make our products less competitive on the international markets.

Also, acid rain legislation such as in the Administration's bill will have a profound effect on this Nation's energy supply and on the long-term use of coal, our most abundant energy resource.

I want to emphasize that the electric industry believes that flexible legislation can be crafted that would result in less severe impacts on our National energy policy and at substantially less cost to the electric ratepayer, and at the same time still achieve responsible environmental goals.

We believe the savings could be as much as 20 or 30 percent Nationally.

In the case of my company, Union Electric, we believe we can achieve a 70 percent reduction in SO₂ emissions from 1980 levels at about half the cost of the 78 percent reduction required by S. 1490, the Administration bill.

Our written testimony will address a number of the concerns that we have with specific provisions of the bill, but I would like to mention just a few at this time.

First, emission caps and baselines. The President stated on June 12 that the Administration's bill would require all plants to meet the same sulphur dioxide emissions standard, which would be set at about 1.2 pounds of SO₂ per million BTU.

However, the bill actually caps emissions from units with rates greater than 1.2 pounds at their 1985 through 1987 generating level. This violates the same emission standard principle and creates major inequities among generating systems.

For example, by 1980, Union Electric had provided coal capacity to cover our customers' power needs until we could bring a nuclear unit on in 1985. When we brought that unit on in 1985, the output from our coal fired units dropped significantly, and because of the timing of bringing on that unit, this bill, the Administration bill, would require us to reduce our system emission rate to 0.87 pounds of SO₂ to continue to fully utilize our coal plants.

Had we brought the nuclear plant on line in 1988, three years later, our required emissions rate would have been close to 1.2 pounds.

We estimate the cost to Union Electric to achieve a 1.2 pound emission rate would require a rate increase in the range of seven to eight percent a year—about \$150 million, if we could use low-sulphur coal.

However, because we would almost certainly have to install scrubbers on three of our large plants to get our emissions to 0.87

pounds, our electric rate increase would be 17 to 18 percent annually, or about \$325 million.

This would have a devastating impact on the economy in our region, and we believe the same condition is true for many other utilities, particularly in the South and the Midwest, that are dependent upon coal to generate electricity.

Another problem the industry has with this bill is the new source cap. The Administration bill requires emissions from new plants placed in service after the day of enactment to be offset 100 percent from other units after the year 2000. This will create major impediments to the emissions trading program that we have been discussing earlier today, because utilities will tend to preserve any emissions credits for future growth or to cover unexpected losses of capacity in the normal operation of their systems.

Systems in high growth regions with low emission rates now will find it particularly difficult to obtain offsets for new sources. This will limit their opportunity to serve growth resulting from an expanding economy.

New plants are tightly controlled under the existing laws, and should not be subject to these new requirements.

We also have problems with the permitting and trading process. The new source cap creates problems there, and we have covered that in our prepared testimony. I will be glad to answer any questions on that.

The enforcement provisions also create severe operating problems for many electric companies, and although we are not opposed to appropriate enforcement provisions, we believe the problems we have set out in our statement deserve your special attention.

Finally, I would like to talk a little bit about clean coal technologies. The industry and the Federal Government are making major financial commitments to develop clean coal technologies. We are concerned that sufficient time has not been provided in the Administration bill, and similar proposals, to realize the full benefit of the full range of technologies under development.

We have talked about a lot of other issues in our testimony, like NO_x control and conservation, and I will not take time to go over them. But I think it is important that you consider those types of recommendations so that we can provide energy to our customers at the lowest possible cost.

I would like to mention just briefly the National Acid Participation Program.

Senator BAUCUS. If you could summarize as best you can.

Mr. CORNELIUS. Well, let me summarize. I think that we must protect the environment, but at the same time, we have to protect the economy of this country. Vital to both those things is the protection of this country's energy supply. I think those things cannot be separated.

We cannot look at the environment alone without looking at the economy, jobs, foreign competition, and a secure source of energy for this country.

Thank you.

Senator BAUCUS. Mr. Arlidge.

**STATEMENT OF JOHN ARLIDGE, SENIOR VICE PRESIDENT,
NEVADA POWER CO., ON BEHALF OF THE WESTERN REGIONAL
COUNCIL**

Mr. ARLIDGE. Thank you, Mr. Chairman, members of the subcommittee, for inviting Western Regional Council to participate in this hearing today.

Joe Cannon, chairman of the Western Regional Council Clean Air Act committee is out of the country and has asked me to represent the council today. My name is John Arlidge, and I am a senior vice president at Nevada Power Company.

As many of you know, the Western Regional Council comprises 50 companies in the 18 western United States. Among its members are a cross section of most of the major industries in the sector.

It includes financial, mining, utilities, transportation, forest products, engineering and energy companies and other enterprises. Our comments today represent a broad view of clean air and acid issues in our region.

I would like to focus my brief comments today on the Mitchell-Baucus acid rain proposal. Since the bill was not available to us to prepare testimony, these comments are based on the two-page summary released last week.

I ask permission to submit detailed comments later on for the record.

Mr. ARLIDGE. I want to commend you for several specific provisions, and raise concerns about several others. First, the Western Regional Council firmly believes the polluter pay principle is the best principle to follow, and it poses a Nationwide tax on electric generation.

In the West, during the past 15 years, non-ferrous smelters have spent more than \$2 billion on their quality control. Utilities have spent more than \$4.7 billion on their quality control.

Powerplants emission controls were imposed even though low sulphur fuels were used that exceeded new source performance standards. So in the West we have and will continue to pay for emissions controls.

It would simply not be fair to ask our region to pay again by subsidizing controls for other parts of the country. We ask that you continue to support the polluter-pay principle.

Second, we strongly support the principle of flexible and freedom of choice, allowing sources to choose the most cost-effective availability to achieve the emission controls. The principles in Phase II of the Mitchell-Baucus proposal, as we understand, provides for that principle.

Third, since its enactment, WRC has advocated repeal of percentage reduction, the requirement that all new fossil-fuel fired sources achieve a percentage reduction in emissions.

Fossil-fuel fired sources, like other sources, should be required to meet emissions limitations in the most economical manner. We applaud your proposal to repeal this provision which openly discriminates against our region and penalizes Western low-sulfur coal.

I note, however, that because of the proposed imposition of SO₂ emission caps as well as new source performance caps, best available control technology and prevention of significant deterioration

requirements, this provision will continue to restrict the emissions to required levels.

Fourth, we appreciate the acknowledgement in the proposal that clean States should receive a credit. However, your clean State credit provides no meaningful benefit to the majority of sources in our region, which are cleaner than even the standards in the Mitchell-Baucus proposal.

Fifth, the post-2000 cap on emissions in both the Mitchell-Baucus proposal and the Administration proposal places a severe penalty on those regions that have cleaned up prior to enactment of legislation. The cap must be modified from the construction of new power sources.

If not, after the year 2000, utility will not be able to provide the required clean electric power for growth now taking place in our service area. The Western regional council advocates treating the clean plants in the West at least as favorably as the plants in the East, which currently exceed the 1.2 standard. By granting allowances to existing plants for the amount by which they emit below the 1.2 pounds per million BTU.

For many reasons which we will provide detailed written comments on, we do not believe that it will be feasible for Western utilities or other sources to purchase allowances from plants in the East.

Sixth, the Western Regional Council is very concerned about the proposed increase in NO_x reduction. The 2 million to 4 million tons by the year 2000 appears to present a problem to powerplants in the West.

If this amount could be achieved by the use of low NO_x burner technology, it might be reasonable. But we fear it anticipates expensive SCR technology, which is neither cost effective nor reasonable.

In conclusion, we note that acid rain simply has not been demonstrated to be a problem in the West, in great part because we have already paid, and continue to pay, the price to reduce emissions. Except for one or two States, Western States are meeting the 1.2 pounds per million BTU standard promulgated in the bill.

We appreciate the opportunity to appear before you today and look forward to continuing to work with you and your staff on these important issues. Thank you.

Senator BAUCUS. Thank you very much, Mr. Arlidge.

Mr. Koskores.

STATEMENT OF NICHOLAS P. KOSKORES, PRESIDENT, THE NEW ENGLAND COUNCIL, INC.

Mr. KOSKORES. Yes, thank you, Mr. Chairman, for this opportunity to testify.

My name is Nicholas P. Koskores, President of the New England Council, the Nation's oldest regional business group, founded in 1925 by the six New England governors and regional business leaders.

I am here today representing over 1,500 New Englanders, educators and businessmen large and small from Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

The council represents every area of economic activity from basic manufacturing to financial services and cutting edge technologies.

The New England Council has long supported efforts to pass comprehensive acid rain legislation, and we are committed to its enactment in this Congress. We compliment the committee for its timely action and look forward to working constructively with all of its members.

On behalf of the council, I am pleased to have this opportunity to share with you our views on acid rain measures that you are considering as amendments to the Clean Air Act.

Our region's natural surroundings are very much a part of our way of life. If you have ever seen the devastation to our forests and lakes, you will know why we are so committed to the passage of acid rain legislation, and why citizens of New England have been willing to ante up over the past and pay much higher energy costs to eliminate sulphur dioxide emissions.

Summarizing my written statement, let me make four points.

First, we are opposed to proposals in several bills before Congress that would impose a new Federal tax on electricity to raise the revenue to provide cleanup subsidies to electric utilities now using low-cost, high sulphur coal, utilities that have lagged behind the rest of the Nation in reducing SO₂ emissions.

This proposed tax would be paid by all US electricity consumers as part of their monthly electric bills, from States using low sulphur coal to States using high sulphur coal to States with no coal fired plants at all, like California.

I might add, it would also include Commonwealth Edison of Illinois, which services more than half of this State and is largely responsible for the reductions in that State, and whose customers now are paying for that more expensive low sulphur coal responsible for those reductions.

For reasons detailed in my written testimony, the council believes that the proposed tax would be grossly unfair to consumers in the six New England States and in some 30 other States that have low SO₂ emissions.

The council has prepared a State by State and utility by utility analysis of the impact of such an electricity tax that it would like to provide for the record, with your permission. (The material referred to has been retained in committee files.)

Mr. KOSKORES. The six States in New England have been leaders in requiring reductions of SO₂ emissions. For example, in 1985, the total SO₂ emissions from all sources in New England accounted for less than 2.6 percent of the Nation's SO₂ emissions.

Emissions of SO₂ from powerplants in the six States totalled less than 1.8 percent of the Nation's total from power plants.

Recently, Massachusetts and New Hampshire enacted laws that require even further reductions in SO₂. As a result, all six States in New England will be meeting SO₂ emissions reduction requirements by 1995 that are equal to or more stringent than requirements proposed for the year 2000 in bills coming before your committee.

These are but a few of the reasons an electricity tax to subsidize those who have lagged behind in cleanup would be inappropriate and unfair.

Our second point: we firmly endorse provisions in the President's proposal that permit utilities to select the most cost-effective means of reducing emissions. We endorse the concepts of bubbling and trading emissions allowances, and urge Congress to ensure that the trading system is a workable one.

Owners and operators of facilities are in the best position to identify the lowest cost ways to achieve overall emissions reductions for their companies, and will be best able to meet requirements with the least cost impact on electricity consumers.

Our third point: we strongly urge Congress to include incentives for energy conservation in acid rain legislation. Experience in New England and elsewhere has demonstrated that energy conservation can be a very cost effective way of simultaneously meeting energy requirements and reducing the adverse environmental effects associated with the Nation's steadily increasing demands for energy.

Let me illustrate. Switching to a low sulphur fuel will result in reduced SO₂ emissions. Installing a scrubber will also reduce SO₂ emissions, but it will also result in a greater use of energy and water and the creation of more waste products. Energy conservation, on the other hand, can result in reduced emissions of SO₂, nitrogen oxide and carbon dioxide, and reduce the use of fresh water and achieve various other benefits.

Our fourth and final point: we urge Congress to avoid actions that would conflict with the recently adopted US-Canada Free Trade Agreement.

Several of the pending proposals for a tax on electricity would be inconsistent with the provisions of the Free Trade Agreement.

We understand that the proposals that along with a tax on fossil generation in the United States would tax Canadian hydro and nuclear would be considered discriminatory and thus be inconsistent with the Free Trade Agreement. This problem could best be avoided by not attempting to impose any tax on electricity generation.

In closing, I would note that President Bush specifically preserved the polluter pays principle in his legislative proposal. He rejected the idea of imposing a new tax to provide subsidies to utilities that must achieve emissions reductions.

The administrator of the Environmental Protection Agency has affirmed that the President remains opposed to the tax and subsidy.

Again, Mr. Chairman, I want to thank you for this opportunity to testify.

Senator BAUCUS. Thank you very much, Mr. Koskores.

Mr. Arlidge, this is a narrow point.

You are concerned that a 2 million ton reduction in NO_x might require the use of selected catalytic reduction devices.

It is the intent of this bill that that reduction can be met with low NO_x burners and thermo deNO_x and also with trading, that is, SCR is not contemplated as being necessary. I do not know if that will work out, but that is what we are trying to accomplish with this bill.

Let me ask you a question, Mr. Cornelius, and maybe Mr. Arlidge and Mr. Walbridge, too.

You, Mr. Cornelius, indicated some problems you have with this trading system—the caps and so forth—and you indicated that per-

haps there is a more cost-effective way to get that sulphur dioxide reduction on a cost effective basis, taking into consideration international competitiveness.

I am wondering how you do that. I mean, if we start with the President's commitment for a true 10 million ton reduction by the year 2000, using 1980 as a baseline, I am curious about what better, cost effective ways you think this country could achieve that goal.

Mr. CORNELIUS. Well, we believe that we can achieve a goal of 10 million tons if you eliminate the tonnage caps and just go to straight emission standards.

In other words, if we go down to 1.25 by 1995, and then 1.2 by the year 2000, we think we will achieve the 10 million tons by 2000.

That gives utilities and others the maximum flexibility in accomplishing the objective.

Senator BAUCUS. That is with the 1980 baseline?

Mr. CORNELIUS. With the 1980 baseline, and as I pointed out in the example of Union Electric, all the President talked about was a 1.2 emission rate across the country.

The way the years were selected, the base points of 1985, 1986, 1987, force us, in fact, down to 0.87. We would actually have to go down, maybe, to 0.82, because we have to have some operating flexibility to avoid the very stringent and almost punitive enforcement provisions.

So our operators have to have a margin to do that. That drop, in the case of my company, would reduce our emissions from current levels or 1980 levels to 78 percent instead of 70 percent. To get that extra eight percent is going to double the cost. As was pointed out earlier, it is that last increment that is terribly expensive. My question, and I think serious people may disagree—is whether it is worth the cost to this country, not only in electric rates and competitiveness, but in the ability to use coal to squeeze out those last few percentages, and whether that will, in fact, have any real impact on the acid rain problem in the Northeast.

I think that the scientific reports that I have seen—and I am not a scientist—indicate that we do not have that severe a problem, and we have some time on our side. So it seems to me that if we can come up with a maximum amount of flexibility, we are going to achieve substantial reductions, if the bill had been drafted along the principles the President set out last June.

Senator BAUCUS. Just so I understand your position—are you saying that we should try to reduce SO₂ emissions by 10 million tons by the year 2000, using 1985 to 1987, 1980 as a baseline, or not?

Mr. CORNELIUS. Well, I am not sure that 10 million tons is the exact figure that we should be shooting for.

Senator BAUCUS. Well, I am saying that—that is the President's goal, and I just—all the bills, serious bills that are being considered here, do state that as a goal, too. I think that as a practical matter, that is the outside parameter that we are dealing with.

The next question is that if that is the case—and I think it is—how do we best achieve it in the most cost effective way?

Mr. CORNELIUS. The best way, then, would be to take away the tonnage caps, and achieve it by just an emission rate cap, which we

believe will happen. We believe that a 10 million ton reduction would result.

Senator BAUCUS. You need a tonnage cap, it seems to me, to achieve the 10 million ton reduction in SO_2 .

Mr. CORNELIUS. Well, the tonnage cap will probably achieve more than that, that is our concern, and not achieve it in a cost effective way.

Mr. ARLIDGE. Mr. Chairman, if I could?

I think the review of the President's bill to date shows that the President's bill would probably result in maybe 12 to 13 million tons reduction, but aside from that, our concern in this point in time is that we have non-affected units because we are all well below 1.2. In fact, every unit in our State is below one.

That makes us a non-affected unit. That makes us in a point where we have no allowances at all that we could ever get in our State unless we try to nominate our units as affected units. That brings in a whole new kettle of worms.

You asked about low NO_x . Your point was that you were looking at low NO_x burners. We have low NO_x burners on our burners now. Where do we go, if you look for 2 to 4 million tons additional NO_x control? That is our concern.

Top that concern with the fact that our growth was almost 12 percent this year. In the last four years, we have not been below six percent growth.

Senator BAUCUS. But those low NO_x burners now, aren't they meeting the standards presently?

Mr. ARLIDGE. Yes, sir. We are exceeding standards, presently. But what do we do for the customers who are moving in? The growth is coming at this point in time, for additional generation, if we have a cap—

Senator BAUCUS. But there is no cap on NO_x emissions.

Mr. ARLIDGE. Well, I am sorry.

Senator BAUCUS. Not in the bill that I am going to introduce.

Mr. ARLIDGE. Granted that, but you say that you want 2 to 4 million tons on NO_x . The concern that I have is probably more on the SO_2 cap, and I was answering your question on where do we go if that 2 to 4 million tons in here of NO_x in your bill becomes a cap—where do we go for that?

Senator BAUCUS. Senator Lieberman.

Senator LIEBERMAN. Thank you, Mr. Chairman.

Mr. Koskores, welcome. It is good to have you advocating our cause here.

I am impressed by one of the charts that you included in your prepared testimony. I have been asking as we go through this question of cost sharing, is it not unfair to some of us, States that have spent some money already to lower sulfur emissions, to ask us to basically pay twice? And your chart shows quite a remarkable discrepancy between the 10 States that have the highest SO_2 emissions and then 10 that have high average fuel costs and low SO_2 emissions—Connecticut is second from the top, second only to Maine, may I say, which is slightly higher.

[The chart referred to follows:]

COMPARISON OF ELECTRIC UTILITIES' AVERAGE FOSSIL FUEL
IN 10 STATES HAVING HIGH SO₂ EMISSIONS WITH 10 STATES HAVING
RELATIVELY LOW SO₂ EMISSIONS

As indicated on page 3, utilities in high SO₂ emissions states tend to have low fossil fuel costs while utilities in low SO₂ emission states have high costs because they use low sulfur fuels.

The table below shows average fossil fuel (coal, oil and gas) costs in 1987 for the ten states with highest SO₂ emissions from coal-fired power plants. For comparison, the table also shows ten other states that have high average fossil fuel costs and low SO₂ emissions. These fuel costs have an important effect in determining whether customers' monthly electric bills are high or low.

<u>State</u>	<u>Avg. 1987 Delivered Cost of Fossil Fuels (\$/MMBtu)</u>	<u>State</u>	<u>Avg. 1987 Delivered Cost of Fossil Fuels (\$/MMBtu)</u>
Ohio	1.566	California	2.511
Indiana	1.471	Connecticut	2.816
Pennsylvania	1.543	New York	2.464
West Virginia	1.431	New Jersey	2.409
Georgia	1.798	Florida	2.224
Missouri	1.422	Massachusetts	2.317
Illinois	2.069*	Maine	2.937
Tennessee	1.371	New Hampshire	2.203
Kentucky	1.264	Oklahoma	2.057
Alabama	1.929	Texas	1.804

* Illinois has relatively high average fossil fuel costs because its largest utility, serving over half the State's population, uses high cost, low sulfur coal and has low SO₂ emissions.

Senator LIEBERMAN. A couple of responses that we have had to this concern that we New Englanders have to cost sharing, and let me ask for your response to the responses. I have raised the question with Senator Coats yesterday, and he said the States in the Midwest that are sources of acid rain are critically important to our economy, they are basic industries, and therefore we in the Northeast have a stake in how they are doing.

If we do not share the burden, actually all of America in some sense is going to suffer. How would you respond to that?

Mr. KOSKORES. Well, each of us as a region has a commitment to play a meaningful, positive role in the development of a comprehensive National plan. New England, of course, has its own important role to play in the Nation's economy. We have paid for our SO₂ emission reductions. We have paid once, we will be paying twice when certain State laws in New Hampshire and Massachusetts compel further reductions, and we will pay again when Clean Air legislation is passed.

We may even be compelled to pay a fourth time if, God forbid, cost sharing is imposed on us. It seems to me that we would establish an unfair precedent if we go ahead and reward utilities, areas that have delayed their cleanups, and penalize regions such as New England and the 30 other States that have gone ahead and made a good faith commitment to reduce emissions.

Senator LIEBERMAN. How about the argument that Senator Simon made this morning—maybe you were here with he made it—that there is precedent for this cost sharing in other energy areas—for instance, the Federal Government has been subsidizing nuclear energy, and Connecticut, for example, has four plants?

Mr. KOSKORES. My own understanding of that is that it may be a little bit off the mark.

I would rather address another point that Senator Simon made about how Illinois is proceeding to reduce emissions there. It seems to me, as I said in my testimony, that most of that emissions reduction has fallen on Commonwealth Edison in Illinois. The largest utility in the State provides services for most of the State. These customers there are already paying for the use of low sulphur.

If this cost sharing plan were imposed, they would be paying doubly, too.

Senator LIEBERMAN. Good point.

We are going to go to another part of it. Do you have any views on the effect on New England of regulating 20 plants as opposed to the 107 plants in Phase I? Have you calculated that at all?

Mr. ARLIDGE. No, sir.

Senator LIEBERMAN. Let me go to Mr. Walbridge just for one question, just to clarify.

Do you support the overall goals of a 10 million ton reduction in the acid rain precursors?

Mr. WALBRIDGE. Well, Senator, I think there is room for a reasonable debate as to whether the 10 million tons is in fact required. There are, I think, many reasonable studies that indicate that it is not required to have the 10 million target, so my testimony is really addressed to given the target, whether it be 10 million tons or 8 million tons, we should look for the most cost effective way of achieving that target.

Senator LIEBERMAN. But you do operate from the premise that there should be some reduction? We are all within that shared range, are we not?

Mr. WALBRIDGE. I think that we probably share that view.

Senator LIEBERMAN. Thank you, Mr. Chairman.

Senator BAUCUS. Thank you, Senator.

Senator Graham.

Senator GRAHAM. Thank you, Mr. Chairman.

I apologize for being absent during the presentation of the testimony.

I would like to ask Mr. Walbridge—on an earlier panel, it was suggested that one of the benefits of the growth cap would be to force increased conservation efforts within the utility industry. Would you describe what your utility has done to date in energy conservation and where you see the greatest potential for future energy conservation initiatives?

Mr. WALBRIDGE. Well, Senator, we have undertaken many conservation programs, not only my utility, but in the State of Florida, where our utility is located, we have an Energy Conservation Act which has required all the utilities to establish programs to meet targeted goals which have been established.

This is basically one of reducing the per capita consumption of electricity. I think conservation is achieved in at least two ways. One, there are the rather fast conservation items that one can achieve by, I guess I would say, changing consumers habits, and there are some longer-term things by changing the efficiency of the energy-consuming devices that we have.

There have been dramatic increases, for example, in the efficiency of air conditioning units, refrigerators, and they have reduced the unit consumption dramatically.

But there is a considerable time period to get the stock of more energy efficient devices into utilization.

Senator GRAHAM. In the earlier testimony from the CEO of Montana Power, he commented about the fact that his regulatory agency was using a 15 year depreciation schedule for various investments that the power company had made or was partially financially involved in with residences and industrial areas.

That long depreciation period had been a disincentive in that aspect of energy conservation. What is your experience in Florida in representing other utilities across the country? I would be interested in comments from other members of the panel on that subject.

Mr. WALBRIDGE. I think the practices, of course, vary considerably across the country on the depreciation practices, tax writeoff periods and so forth for these various devices, and perhaps also by the form of ownership of the particular utility.

I represent the group of utilities that are consumer owned, non-profit organizations, and so our financial factors are different than, certainly, the industrial utilities.

I would say, however, that with the ability to write off or recover the costs of conservation costs over a shorter period of time, there is certainly a much greater incentive to implement those, but there is a much smaller risk involved in taking those capital investment decisions.

Senator GRAHAM. I would agree with that.

I think the thing that justifies shorter depreciation rates is that it is very difficult to judge or measure the economics of these conservation things, because they are really treading new ground, and the shorter period in which we can recover that, the more the economics makes sense. That is certainly an incentive.

Mr. ARLIDGE. This is an ongoing concern in our State. We have had a very active conservation program since the early 1970s.

We have, during that period, some of the better programs, if you will, allowed to be amortized on a spot by spot basis, and not too much consistency.

Our commission is, however, at this time holding hearings on methods to stimulate better capital investment into conservation, even though we have it. We hope that it will be equivalent to supply side investment, and so does our commission. So we are hoping to see a good, active program come out of that.

Mr. KOSKORES. Senator, generally speaking, a number of our utilities in New England are in the forefront of conservation efforts.

We are looking forward to seeing what ultimately ends up in the Clean Air Bill with respect to encouraging further conservation.

Senator GRAHAM. Thank you, Senator.

Senator BAUCUS. Thank you, panelists, for your helpful testimony today.

I would now like to call up the Honorable Roy Romer, the Governor of the State of Colorado, and also Senator Tim Wirth, who is becoming a member of this committee.

STATEMENT OF HON. TIMOTHY WIRTH, U.S. SENATOR FROM THE STATE OF COLORADO

Senator WIRTH. Mr. Chairman, thank you very much. I have wanted to just come by and introduce my esteemed colleague, our extraordinarily effective Governor in the State of Colorado.

We have embarked upon a series of programs strictly in the Denver metropolitan area to try to clean up the air there, and Governor Romer has been a very effective advocate for a variety of alternatives, particularly in the fuel program, and has been a tireless supporter of efforts within the City of Denver and the Denver metropolitan area.

He is here, come in just for this, turning around and going back again, so I wanted to come by and just introduce him to the committee. He and Senator Graham has known each other, I know, from working in the vineyards of Governorships.

Governor Romer, we are delighted to have you here. Thank you very much for coming.

STATEMENT OF HON. ROY ROMER, GOVERNOR, STATE OF COLORADO, ON BEHALF OF THE ALLIANCE FOR ACID RAIN CONTROL, ACCOMPANIED BY NED HELME, EXECUTIVE DIRECTOR, ALLIANCE FOR ACID RAIN CONTROL

Governor ROMER. Thank you very much, Senator, Senator Graham.

With me today is Ned Helme of the Alliance for Acid Rain Control.

I am here really in two capacities: first, as a member of the Alliance for Acid Rain Control, and second, as Governor of Colorado.

As you know, the alliance is made up of 14 current and former Governors as well as representatives of environmental groups, community groups, industry and academia. It represents all regions of the country.

I am going to get into the testimony quickly. I have written testimony which I would like to offer.

The alliance supports the goal of a 10 million ton reduction in sulfur dioxide emissions. We support the principles of flexibility, cost effectiveness and equity. And we believe that by not mandating specific technology, the bill provides the best possibility of allowing us to approach our goals in our separate ways.

It seems to us that this approach will provide the best reduction of emissions per dollar spent. It will mean that utilities can choose between scrubbing, fuel switching, and perhaps other technology.

I want to talk about two or three items. I appreciate the bill you have introduced, and your attempt to take care of some of our concerns in the West.

We are concerned about the subsidy question, so let me get right to the heart of that matter. We believe there is already a subsidy in this bill in terms of the sharing of credits, and we do not think we ought to have a further subsidy in the form of a national electric tax which then is shared with the utilities in question.

Basically, this is a matter of equity. We have already paid, many of us in the West, to clean up our utilities, and I do not think we ought to be asked to pay again.

Just let me take my neighbor to the South, New Mexico. New Mexico has scrubbers on every plant, and it uses low sulphur coal. In 1977, when we had the percentage reduction, the West did not get a subsidy. We came to the table and we did what was right, and we did what was necessary. Now take a State like Ohio which has only two scrubbers in all of its plants. It has some of the lowest utility rates. It is below the National average.

I just do not think it is fair to subsidize those who now need to cure their own problem, and put a tax on those who have already come to the table and done it. I just think there is a very basic question of equity here that we ought to put on the table.

The next issue is the question of the credits themselves. There is already a subsidy in the bill, when you have the Greenfield offset. Any new start will have to go buy the credits.

We do not object to that. We agree to that being a part of the bill. But we are concerned about who has the control of the sale of those credits. You know, new starts in the West—new capacity—ought not be subject to the decision of an Ohio utility, for instance, as to whether or not it wants to sell the credit.

I would suggest that you keep the basic approach in the bill, but that you look for a way to make those credits available for sale, possibly through the EPA, so you do not have one region of the country saying, "we are not going to allow another region to grow because we are just not going to sell our credits." There is a very basic question of equity and economic growth. I do not want one region of the country to have a stranglehold of sorts on another, and you may wish to push me with questions on that.

We would suggest that you pool those credits and have some mechanism of allocation for their purchase or sale, perhaps through the EPA rather than through individual utilities.

To summarize, I think the principal issues that I would extract from my written testimony would be that we like the basic approach, that we do not want to have a national tax, and that we think you ought to modify the Greenfield offset.

Let me leave my comments about acid rain at that. You may wish to push in certain questions.

As Governor of Colorado, I have just a few comments I would also like to make in terms of autos—that is, in terms of non-attainment issues. I see that there has been some real movement in the last week or two on that. There are four things that I would like to pick out.

I feel that we ought to have warranties on automobile emissions devices good for 100,000 miles, and not just 50,000. I also think that we need to add some language to the bill to be sure that we get some tests of cold start operations. We strongly believe that the manufacturer should be required to certify reasonable carbon monoxide standards for cold weather operations and cold weather starts. There is some improvement, I think, that could be made in a bill in that regard.

I also think that the Federal Government needs to clarify the provisions dealing with transportation plan approval to ensure that priority is given to air quality in the transportation planning process.

The final item I would mention is that light duty trucks ought to be required to meet the same carbon monoxide standard required for cars.

Now, I understand today is primarily on the acid rain provisions of the bill, but while I was here I just wanted to add those other matters of emissions control.

Senator BAUCUS. Thank you very much, Governor.

All those point you made with respect to nonattainment are covered by the bill that I have introduced.

I assume that the comments you made in nonattainment were referring to the President's bill.

Governor ROMER. That is right.

Senator BAUCUS. So you can rest assured that all those points that you made with respect to nonattainment are covered in the bill I introduced.

In your opinion, does the creation of the post year 2000 cap tend to provide an additional market opportunity for low sulfur coal?

Governor ROMER. I think that—

Senator BAUCUS. The Western Resources Council so stated earlier, and I am curious about whether you also come to that same conclusion.

Governor ROMER. You know, I had not thought about that. It was not a matter of concern to me as to whether it did.

My point on the cap was that I think that we need it in order to keep the pressure on to reduce pollution.

But I am concerned that the cap be administered in a way in which there be equity for those which could utilize it.

Senator BAUCUS. On that point, you mentioned having the EPA somehow manage some of these credits.

I have a concern about that, it tends to reduce some of the efficiencies of the marketplace. Would you have EPA gather all of these and then dole them out? I am curious as to what role you would have for EPA.

Governor ROMER. I would be willing to have the marketplace work here, have them run an auction.

I just simply do not want to have credits available in certain States that simply are not going to go on the free market because they are being reserved for the economic advantage of new capacity.

Capacity here could really be a generation of economic activity and growth, and I would like not to have other criteria than the market affect who gets those credits. If it were up to a utility, or to a combination of utilities in a certain part of the country, to say, "Well, we may or may not put these on the market," you know, maybe you could have EPA run an auction.

Do not interfere with the market process, but have them run an auction, just to be sure you have the market forces dictating who buys them.

Senator BAUCUS. I hear you. You raise very good questions that we must address. The auction is an idea.

One question is, how often are we going to have an auction? There are a lot of questions here. You have raised some very good ones, Governor, and these are definitely questions that we are going to have to focus on.

Governor ROMER. Senator, one other thing.

I have looked at your bill, and I really appreciate what you are doing. I would hope that rather than shooting at 20 utilities, we might keep it at 100. Let me tell you again, it is for market reasons.

I think that if you have more plants in the mix, you are going to have more credits available from more sources.

If you have only 20, I think it narrows the sources of those who might have the credits available. Also, I think that it also leads to more argument for subsidy, because they say, "Why pick on us? You need to come to the table and help us."

You need to broaden that group, and you will have less pressure for a subsidy.

Senator BAUCUS. There are those, though, who claim that the 20 would make this trading system work better, as it would be more bang for your buck.

Mr. Graham.

Senator GRAHAM. Thank you, Mr. Chairman, I want to express my appreciation to Governor Romer for making this very significant effort to be here today, and providing us with such thoughtful analysis of the issue and recommendations.

Governor, I am concerned about the pollution credit issue in terms of fairness. Earlier today, we heard from the CEO of Montana Power who indicated that because of previous efforts that they have some of the cleanest plants in the country, with rates that go down below 0.1 pound SO₂, and expressed the concern that they were potentially in the position, in order to service their cus-

tomers, and the economic development which he anticipates will occur in that State, of having to pay to buy credits from companies that are much less environmentally in compliance than is his plant.

I think that is a troubling issue of basic fairness that pits previous efforts against future efforts. Would you comment as to how you think that fairness issue can be rationalized?

Governor ROMER. As you can tell, we are concerned about the credits, also. But our larger concern is that there be no National tax. Therefore, we are going to come to the table with a middle position of saying, "Okay, we are willing to give some subsidy to those who are the heavy polluters by the credit system, but we want to be sure it is administered fairly."

Now, maybe also there ought to be some credits shifted to the clean States, because Montana, New Mexico, Colorado, and some other States have been, through their customers, paying for this cleanup. We have been ahead of the game, where some, like Ohio, have been taking advantage of lower rates.

I think there are over 100 plants in Ohio, and two have scrubbers. I want to help bring them on board, but I do not want to make taxpayers in other States pay unduly for that.

So with the credits, we thought in the spirit of compromise and equity, yes, we will go along with it. Maybe we have too much allocated to the heavy polluters, and there ought to be some credits shifted to the clean States, and if there is a way to do that, I would support it.

Senator BAUCUS. Any further thoughts that you or the organization that you represent might have on that subject would be very much appreciated.

Governor ROMER. We will give some more thought to it.

Senator BAUCUS. Governor, thank you very much. We appreciate it.

Governor ROMER. I appreciate all the efforts you are doing here, because this, I think, is one of the most critical public policy questions that we face. It is a question of whether we can have rational and good growth, and I appreciate your efforts.

Senator BAUCUS. The Ohio delegation has been particularly helpful.

Okay, one final panel.

David Parker, president of the Aluminum Association; James Friedman, Coalition for Environment Energy Balance; and John Prendergast, LTV Steel, representing the Council of Industrial Boiler Owners from Cleveland, Ohio.

STATEMENT OF DAVID PARKER, PRESIDENT, ALUMINUM ASSOCIATION, INC.

Mr. PARKER. Thank you, Mr. Chairman, members of the committee.

I am David Parker, president of the Aluminum Association.

Senator BAUCUS. I compliment you for your patience. Here it is, almost 12:45.

Mr. PARKER. I am here to testify on the subject of the cost of the control of acid rain and the international competitive implications

that it poses to U.S. primary aluminum producers whose operations will be significantly and adversely affected by the proposed acid rain legislation.

Electricity is critically important to primary aluminum production. Implementation of proposed acid rain control legislation will substantially increase the cost of electricity for aluminum operations where power is derived from coal fired generation.

Just as critical is the question of the inclusion of additional SO₂ and NO_x controls on industrial sources, which in and of themselves could add significant capital and operating costs to aluminum production facilities, with little contribution to achieving additional reductions in emissions.

Increased production costs will have significant long-term negative effects on the U.S. aluminum industry and its ability to compete with primary aluminum producers from abroad.

Please consider the basis for our concern about the impact of acid rain control legislation. One, the cost of electricity ranges from 30 to 40 percent of the cost of producing primary aluminum in the United States, with the average being 33 percent.

Two, it takes an average of 7.5 kilowatt hours to make a pound of aluminum.

Three, at present, the average cost of electricity for U.S. primary aluminum plants is 28 mills per kilowatt hour. And for aluminum plants in the rest of the world, it is only 20 mills.

Four, since 1978, the cost of electricity for smelters in the United States has gone from the lowest quartile of world cost to the highest.

Five, during the period of rising electricity costs from 1978 to 1986, nine primary aluminum plants closed in the United States, and the number fell from 32 at that time to the 23 that are currently in operation today. Some 15,000 jobs were lost directly as a result of these plant closings.

Six, six of those plants that were closed received all of their electricity from coal fired generating, and the others from natural gas.

Seven, the United States share of free world primary aluminum capacity declined from 45 percent in 1970 to 28 percent in 1987.

Eight, the eight U.S. plants which would be directly affected by the acid rain control proposals before us now account for 40 percent of the U.S. primary aluminum capacity, and they represent an aggregate investment of \$2.5 billion, providing employment to 20,000 people.

Nine, current U.S. smelter production costs are about \$0.60 per pound, compared to \$0.53 in Europe, \$0.48 in Brazil, \$0.47 in Canada and \$0.38 in Venezuela.

Ten, since 1980, all of the world's new primary aluminum production capacity has been built outside the United States, where electric costs are substantially lower than in the United States.

Eleven, 52.5 percent of the U.S. aluminum needs are met by U.S.-based primary production. Recycling used aluminum contributes another 28 percent to our aluminum base, and imports contribute 19.5 percent.

From 1984 to 1987, aluminum ingot imports into the United States have increased 41 percent.

In conclusion, the aluminum industry is greatly concerned that the cost of implementation associated with the various proposals for controlling acid rain are so onerous that the results would be to create a severe competitive damage to the major industrial users of electricity. As acid rain control is written, we urge that it include controls to mitigate the impact of all of those threatened by the increased cost of electricity, be they residential, commercial or industrial.

Otherwise, severe economic dislocation and the possibility of plant closures will be upon us. The vulnerability of the U.S. aluminum industry to competition from foreign producers already advantaged by significant lower electricity cost must be addressed in this debate.

Thank you very much.

Senator BAUCUS. Thank you.

Mr. Prendergast.

**STATEMENT OF JON T. PRENDERGAST, LTV STEEL CO.,
REPRESENTING COUNCIL OF INDUSTRIAL BOILER OWNERS**

Mr. PRENDERGAST. Yes, thank you, Mr. Chairman, members of the committee. I am Jon Prendergast with LTV Steel Company, out of Cleveland, Ohio.

My testimony today has the broad support of the American Iron and Steel Institute, the American Paper Institute, the American Textile Manufacturers Institute, the Chemical Manufacturers Association and the Council of Industrial Boiler Owners, and the NEDA/CAAP project.

We believe that industrial boilers, industrial cogenerators and industrial process sources should not be subjected to mandated emissions limitations under an acid rain control program.

Although we have not had the opportunity to review in detail the language of your bill, Mr. Chairman, we understand that it is your intention to exclude such units and, if so, we commend that action.

Coverage of these sources would stifle growth of efficient and less expensive power production, would be excessively costly with minimal environmental benefit, and would further weaken the international competitive position of U.S. manufacturers.

Non-utilities, have already dramatically reduced their sulphur dioxide emissions. Several studies have noted the decline of SO₂ emissions from industrial sources. These studies state that SO₂ emissions from industrial source fuel combustion have declined about 50 percent since the early 1970s.

The causes of this downward trend are several. Energy conservation measures undertaken by industry in the last decade have certainly played a role.

In addition, industry is using lower sulfur fossil fuels and increasing its use of self-generated wastes as fuels.

Finally, various provisions of the existing Clean Air Act are working to limit industrial SO₂ and NO_x emissions.

It has been industry's role to be the leader in reducing emissions. Costs sharply escalate for further removal and retrofit of existing

units, and for some boilers, further reductions may be technologically impossible.

Including industrials under acid rain provisions will provide minimal benefit at excessive cost. Non-utility units account for a very minor portion of national SO_2 emissions. The total national emissions for all industrial boilers is less than the 1.8 million tons emitted by the top five utility stations.

In fact, requiring emissions limitations of 1.2 pounds per mm BTU from industrial boilers alone would reduce national SO_2 emissions by only 1.2 percent, at a cost of more than \$250 million annually.

In addition to an almost insignificant environmental benefit at a disproportionately high cost, more than 70 percent of the cost burden would fall on the five States of Illinois, Iowa, Tennessee, Wisconsin and Indiana. These are substantial regional inequities by any measure.

Considering industrial process emissions, the 11 identifiable process source categories described in our written testimony contain some 305 different process source types. The complexities and potential cost for developing, implementing, installing, regulating and monitoring these 305 different emissions control technologies at literally thousands of plants are almost immeasurable, and would result in minimal environmental benefit.

Industrials will bear the economic brunt of acid rain controls in any case. Industry as a whole consumed electrical energy in 1988 at a cost of \$40 billion. Industry will pay more than its fair share of acid rain control costs, as utilities pass through the costs of switching to more expensive fuels or installing new control equipment.

For example, in energy intensive companies such as those in the steel industry, acid rain control legislation could mean electric rate increases as great as 25 percent for some mills.

The utility industry is much more capable of achieving a true cost effective acid rain control program because of large unit size and economies of scale. Utility boilers are, on the average, 30 times larger than industrial boilers, and therefore enjoy favorable economies of scale in reducing air emissions as compared with industrial boilers.

For example, the cost of removing a ton of SO_2 from a non-utility boiler is three to four times greater than the cost of the same unit reduction from a utility boiler.

Industrial steam is of vital importance to American production. Approximately two-thirds of all industrial fuel burned in the U.S. is for process use, to drive mechanical equipment, for space heating, or for on-site generation of electricity.

Since manufacturers cannot automatically pass through emissions control costs without further weakening their industrial competitiveness, additional legislated emission control measures will involve severe economic consequences for industry-plant closure, cancellation or extended delay of plant expansion or new plant construction, and severe production cutbacks, with a resulting severe impact on U.S. employment.

Cogeneration is a source of less costly and more efficient energy. On this issue, some of the legislative proposals, including the Administration bill, would subject acid rain controls to cogeneration

units, that is, units which simultaneously produce electricity and steam.

Such power producers have become an important source of the Nation's generating capacity by producing electricity more efficiently and at less cost than the utility industry, for internal consumption as well as for distribution through the utility grid.

These systems now comprise over 30 percent of all new electric generating capacity currently being installed, and will account for about 10 percent of the Nation's electric supply by the year 2000.

Five-eighths of all industrial boilers sold over the last 10 years were for industrial cogeneration. Typical cogeneration systems are twice as efficient as utility power generation, consuming only one-half of the fuel and emitting only one-half of the pollution per unit of useful energy.

Senator BAUCUS. I am going to have to ask you to summarize, Mr. Prendergast, the best you can.

Mr. PRENDERGAST. I only have one last item, and it deals with percentage reduction.

As we understand the Mitchell-Baucus proposal, it would repeal the percentage reduction requirements of the Clean Air Act, and we applaud that effort. We believe that the requirement effectively reduces our fuel choice and flexibility.

Thank you very much, Mr. Chairman.

Senator BAUCUS. Thank you very much, sir.

Mr. Friedman.

STATEMENT OF JAMES M. FRIEDMAN, COALITION FOR ENVIRONMENT-ENERGY BALANCE

Mr. FRIEDMAN. Thank you, Mr. Chairman.

As you commented at the outset, it has been a long morning, and I want to express my appreciation, being, I guess, the last witness on the last panel today.

You expressed your appreciation, now I express my appreciation to you for your attention to this.

To some degree, I am cast in the role of Zsa Zsa Gabor's seventh husband who, as we all know—he knew very well what was expected of him, but he did not know how to make it interesting.

I would like to address some of these topics, even though they have been addressed by others on the panels this morning and at other times during the extensive testimony you have been receiving.

I will not read my testimony. I am going to touch on a few highlights.

I am here representing the Coalition for Energy-Environmental Balance, which has been involved in the acid rain issue for its entire legislative life, going back to 1981.

The Coalition is made up primarily of coal fired electric utilities from the Midwest.

In order to keep within my time limit, let me touch upon a few matters. First, we would urge the subcommittee, the full committee, and the whole Senate to revisit in depth some of the topics that have been touched upon in the scientific sphere, and that is, I think the debate and the legislative processing of this issue has

moved from a consideration of the scientific underpinnings of this issue into a political process.

Explicitly, I would refer to a couple of things. First, which I think you yourself have referred to as a consensus with regard to a 10 million ton reduction of SO_2 emissions Nationally—Mr. Reilly, the administrator of the EPA, testified here, I think last week or earlier this week with regard to the evaluation of different tonnage goals, be it 12 million, 10 million or 8 million, or perhaps lower or higher at either end of that spectrum.

There are enormous cost factors involved here, as Mr. Reilly testified, and I think is generally agreed. That 12 million tons would cost twice as much as 10 million tons to reduce, and 10 million tons, I believe, will cost about twice as much as 8 million tons to reduce.

In all of the literature that I at least am familiar with, there has been no specific scientific basis established for any one of those targets to accomplish a reduction in the actual deposition of the acid ions.

Secondly, I would urge the subcommittee once again to review the issue of the contributions of distant and nearby sources—that is, it is acknowledged in general, scientifically, that the contribution to whatever acid deposition problem exists is in some fashion proportionate to the distance over which the precursor elements are transported.

To put that in simple language, I would urge the subcommittee to look at the issue of how much a utility plant in Illinois, Indiana or Ohio may be contributing to problems in Canada or in Maine, as compared to automobiles or other sources in Massachusetts or Connecticut or New York City.

Finally, on the scientific front, I know Mr. Mahoney is going to be testifying here, I believe, tomorrow. I would hope that the subcommittee would look carefully at the product of the NAPAP studies.

Senator Moynihan, a member of the subcommittee, was a sponsor of the NAPAP study back in 1980. That study is about to reach its conclusion, and I would hope that before legislation would be finalized, there would be time to consider the final conclusions of that report.

Over \$400 million has been invested, 10 years worth of scientific investigation. We think that is worth waiting for, in light of the fact that the earlier reports by NAPAP indicate no immediate crisis that requires action this month rather than next year.

Let me touch very briefly on the Midwest. There have been a number of comments, and I think this is a subject that undoubtedly evokes a considerable amount of emotion and political sensitivity. We are aware of that.

Our coalition would like to point out that first of all, significant reductions have been achieved in Midwestern emissions. In some systems with which I am familiar in the Midwest, reductions of up to 50 percent in SO_2 emissions from peak emissions have been achieved.

Overall, the region has achieved reductions approaching 20 percent. With regard to the issue of electric rates, I have attached to my written testimony some random examples of electric rates be-

tween various regions of the country. I think that the conclusions that have been drawn are perhaps somewhat simplistic.

Believe me, electric rates in Ohio, for instance, are not low. Governor Celeste has communicated that, I believe, to the subcommittee and also to the President. Those figures should be looked at before someone concludes that Ohio and other Midwesterners are not paying their share both for electricity or for cleaning up that electricity.

Finally, I would touch in the one moment or so remaining to me on one specific item. I know that in particular in the legislation that you and Senator Mitchell have introduced, and several others, flexibility of compliance has been stressed.

The repeal of the percentage reduction provision in particular, I would urge you to look at the subject of Section 125 of the Clean Air Act. All other attempts at flexibility to achieve low-cost compliance must cope initially with the Section 125 barrier.

That is the section which I think most people know requires utilities to use so-called local coal, regardless of whether they can achieve compliance through the use of low-cost elements.

Consequently, imposing these reductions on Midwestern utilities while section 125 remains in the statute does not allow for the flexibility which I think has been the goal which has been expressed.

There is a lot more which could be said, but the red light is on, and we are at the end of this panel. I very much appreciate the opportunity to testify.

Senator BAUCUS. Thank you very much, Mr. Friedman.

Mr. Parker, Senator Simon earlier recommended a 1 mil per kilowatt hour fee on monthly utility bills over \$50. What would you say to that recommendation?

Mr. PARKER. I think that we could say that the aluminum industry would oppose that.

Senator BAUCUS. Why?

Mr. PARKER. Well, mainly because we are going to be paying for those costs on the front side as well as on the industrial processing side.

Senator BAUCUS. Do you think that that kind of a proposal would disproportionately hit your industry, because you already are so dependent upon power?

Mr. PARKER. Yes, sir.

Senator BAUCUS. I am somewhat familiar with the relative power costs that the U.S. aluminum industry faces as compared with competitors.

There are probably a lot of factors that go into that, and it is partly the environmental costs. I am sure that is part of it.

There are also probably transportation costs, or it could well be higher capital costs. We Americans pay higher real capital costs than do a lot of our competitors.

Could you just give me a sense of the degree to which capital cost is a factor here? It is not only in building an aluminum plant—it is probably also a higher U.S. capital cost that goes into building that utility, too, which is then transferred into your power rates.

I was curious—how much of a problem is that?

Mr. PARKER. Well, I think the whole infrastructure is something that we would like to address, and with your permission, I would like to provide you with a paper in that regard that would compare some of those costs—not only for the United States, but also for some of the construction of some of the other aluminum facilities around the world.

Senator BAUCUS. That would be helpful.

[The information referred to follows:]

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October 18, 1989

The Honorable Max Baucus
Chairman
Subcommittee on Environmental Protection
Committee on Environment & Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

At the October 4, 1989 hearing of the Subcommittee on Environmental Protection on the subject of acid rain, you requested that I provide you with "a sense of the degree to which capital cost" is a factor in the international competitiveness of aluminum.

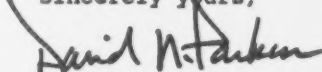
Capital is not a substantial item of cost difference for private investors in aluminum facilities whether in the U.S. or elsewhere in the world. As you know, electricity is the most important cost element in the production of aluminum followed by raw material and labor. The cost of capital and transportation is of lesser significance.

Capital cost differences are much greater between privately financed and government financed facilities because of the access of governments to lower cost capital. This difference is magnified when the funding for a government facility is provided by any of the multinational development banks.

Access to favorable financing enables many foreign governments to provide lower cost electricity to many of the U.S. aluminum industry's foreign owned competitors.

I appreciate the opportunity to work with you on this important subject.

Sincerely yours,


David N. Parker
President

DNP:gr

Senator BAUCUS. Mr. Friedman, the fact is the President wants us to pass this bill this year. He is pushing us to push this bill through the Congress, through the Senate and the House, pass its bill, and go to conference and have a bill on his desk by January 1. I mean, that is the reality that we face here.

So doesn't it make more sense for us to just figure out how to take the best information we now have, and not wait for another study and wait for more analysis, but get on with it?

Mr. FRIEDMAN. Mr. Chairman, if I might—I can understand that concern, and I know that often when we speak of the NAPAP study, people have a similar approach to that.

I think I would respond as follows. Even Presidents can be wrong. The issue is not to wait for another study. NAPAP is not another study. NAPAP is a series, as I said, of \$400 million worth of extensive research, sponsored independently—not by the utility industry, the coal industry, or other involved parties.

The culmination of nine years of work now is upon us, and will be available not in a long time, and not by beginning some new study, but within a relatively short period of time. I believe you will hear a good deal about that from Mr. Mahoney, and he can tell you exactly where that stands.

Senator BAUCUS. That is right.

Mr. FRIEDMAN. So what I am urging, not only to this subcommittee, but also certainly to the President, were he here today, is that the urgency of the problem is one which does not demand action on January 1 of 1990, if we are going to have significant final scientific input within a short period after that. And it is not a matter of years. It will be available during 1990, in my understanding.

Consequently, I think we are talking about legislation that is going to set energy policy as well as environmental policy for decades to come. You have heard testimony today about the long-term effects, we are trying to project what things are going to look like in the year 2000 and 2008. So I am saying that we have got some months here to wait for that, and I would hope that after nine years and \$400 million, we could include that in the consideration of the legislation.

Senator BAUCUS. Well, I appreciate that. We are having a hearing tomorrow.

It is not as if there is no information, a black box, and suddenly it is all available at the end of the nine year study.

Secondly, as you well know, there are many organizations that document the public health hazards let alone other environmental problems of deposition.

There are those that say that about 50,000 premature deaths in America are due to sulfates in the air. There is countless testimony here above and beyond the NAPAP study pointing out the public health problems let alone other environmental problems associated with acid rain, which to me indicates we should move and do the best we can with the evidence and the information we have available.

We will always be revisiting this, too. It is not as if any bill the Congress passes is going to be the be-all and end-all of all acid rain legislation. We are going to constantly be doing this, just because

the Congress meets virtually every day. So we will be hopefully improving upon what we do.

Mr. FRIEDMAN. Well, if I might, very briefly, comment on that point—I happen to agree with you. And that is one of the reasons that I think that if indeed it is the judgement of the Congress and the President to move forward in the direction of some mandated reduction of SO_2 and NO_x emissions, that it would be wise and it would be prudent, and it would most certainly be cost effective to set a much lower target because of the dramatic incremental costs involved.

If, indeed, later on the Congress and the scientific community revisit these issues, as you will, you can then impose more stringent controls if they are necessary. It is a lot easier to ratchet down emissions and to reach those controls when you have found a basis and a need to do so than it is to take a 10 million ton reduction at the beginning and then find out later that perhaps that was not necessary to achieve some of the goals that were agreed to.

Senator BAUCUS. I hear you. It is run by deadlines, in my view. People tend not to do things until they have got to do them.

I just think that sometimes it is important to have deadlines that are as reasonable as possible, but just to kind of move us along and therefore hold our feet to the fire. If we have made a mistake, we will adjust it, change it. We can always adjust it and change it.

But I just think it is better to keep the pressure on, keep us moving—that is Congress, the country, everybody. Otherwise, we just study and try to find a perfect solution.

You know, someone once said that the way you spell perfection is paralysis. I think that often is true.

Thank you very much, everybody. The hearing is adjourned.

[Whereupon, at 1:08 p.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record and responses to additional questions follow:]



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Testimony for the Hearings of the Senate Subcommittee on
Environmental Protection

Submitted by the Western Organization of Resource Councils
October 4, 1989

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to submit testimony on behalf of the Western Organization of Resource Councils, or "WORC." My name is Glee Murray. I am the Washington, D.C. Representative for WORC.

The Western Organization of Resource Councils is a coalition of grassroots organizations concerned with the preservation and enhancement of economic and natural resources. Our members live and work in five states: Colorado, Montana, North Dakota, South Dakota, and Wyoming. Most of them are ranchers and farmers who live every day with the stress on human health and on livestock and crops caused by acid rain and global warming. Our members know firsthand that climate change and the effects of acid rain have a negative long-term impact on their economy and their environmental well being.

Western citizens have been aware of acid rain and its devastating effects for over two decades. Dr. Clancy Gordon, now deceased, began studying the environmental impacts of acid rain in the mid-1960s while he was a professor at the University of Montana. His research led to some of the earliest work done on controlling SO₂ and NO_x emissions from smelters and power plants. From our western vantage point, we are pleased that the impetus to reduce acid rain seems to have reached the national agenda at long last.

As amendments to the Clean Air Act have come and gone over the years, the Western Organization of Resource Councils' assessment of them have been based upon several principles. They are:

1. Emissions from all sources of SO₂ and NO_x must be reduced in order to reduce the adverse effects of acid rain and global warming on human health, as well as livestock and crops.
2. Energy conservation, energy efficiency and the use of renewable fuel sources must be the foundation of any acid rain and global warming reduction plan.
3. Efforts to reduce acid rain and global warming must be a national effort -- that means clean up will cost everybody something.

The acid rain bill you and your colleagues are sponsoring contains many of the principles we adhere to. We appreciate your leadership on acid rain and global warming reduction.

In general, we support the 10 million ton SO₂ reduction by the year 2000. At the very least, a 10 million ton reduction is a minimal national effort, a start in clean up. We support the 2 million ton NO_x reduction by 2000, based on 1980 levels.

We support an emissions ceiling as mandated in your bill by the post-2000 cap on emissions. We also support the credit for SO₂ emissions reductions achieved during Phase I, but only if those reductions result from new conservation and/or renewable energy programs.

We are concerned that repeal of the "percentage reduction" requirements after the emissions cap goes into effect may create greater demand for western low sulphur coal. Our concern is for the destructive long-term impacts of strip mining on fragile semi-arid land and precious aquifers. As you know, the organization I represent before you grew out of our members' will to conserve our land, water and air in the face of massive energy development.

We are disturbed by the incentives for developing "clean coal" technologies. At the very least, equal incentives for developing energy conservation programs and renewable fuel sources should also be included. Over the long run, energy conservation, energy efficiency and the use of renewable fuel sources will provide better environmental safeguards than continuing to burn fossil fuels. All options for reducing SO₂ and NO_x should compete fairly; therefore, incentives should be provided for all options.

If "clean coal" technologies are promoted, then utilities should be required to increase the efficiency of the power plant utilizing such a technology. A minimum reduction in the power plant's heat rate (Btus burned per kWh) should be set. The American Council for an Energy-Efficient Economy (ACEEE) suggests a minimum of 15 percent in heat rate improvement. This would ensure that real fuel savings and CO₂ benefits occur. I would be glad to provide the subcommittee with ACEEE's research on energy efficiency.

Mandating real reductions in acid rain and global warming must be a national effort. The real task before this Congress is to craft a bill in which costs are borne by every region, in which no group is exempted.

Equity is difficult to define. Any one facet of energy production, if looked at separately, is inequitable. Easterners have criticized the coal severance taxes in states like Montana and Wyoming as being an unfair cost to them. Some Western Congressmen recently balked at reauthorizing fees assessed on mined coal that pay for reclamation of hazardous abandoned mine sites. They said that clean up of those sites is an "eastern problem" because most sites are in the east.

Past efforts to amend the Clean Air Act have ground to a halt when one region turned on another, refusing to pay for cleaning up "someone else's dirty air." Cries of inequality have stopped this legislative process many times.

However, air belongs to all of us. Clean air is all of our responsibility. Clean air is our national heritage and should be treated that way.

In this spirit, your acid rain bill requires that oil-fired facilities burn lower sulfur oil. We support this inclusion. In fact, we would like all SO₂ and NO_x polluters included in this bill. In the Yellowstone Valley in Billings, Montana, oil refineries contribute the majority of the 1.74 pounds of SO₂ emitted daily, for each person in the county (1987 figures from the Montana State Department of Health).

Your acid rain bill also contains an important, but troubling exclusion. Seven western states are exempted from Phase I and Phase II SO₂ and NO_x reductions. This exemption has been made to single out "clean" states, those that have newer power plants with better emissions controls, so that they won't bear an inequitable cost of SO₂ and NO_x clean up.

Some of our members reside in three of those "clean" states. We know that utilities in those states reduced their SO₂ and NO_x emissions in new plants because the Clean Air Act required them to do so, not because they volunteered to be guardians of clean air. Their older power plants are without emission control technology and every day pollute the air in Wyoming, North Dakota and, Mr. Chairman, your own Big Sky of Montana. Since clean air is all of our responsibility, all SO₂ and NO_x polluters should be included in any process for defining a "clean" state and determining which should be exempted.

If the "clean" states exemption leads to "compromise deals" that undercut the whole acid rain and global warming reduction program you now seek, then we will fervently oppose the exemption.

Thank you for the invitation to testify. We look forward to working with you and your colleagues on this critical legislative effort.

Glee Murray
Washington, D.C. Representative
Western Organization of Resource Councils

STATEMENT
OF THE
MONTANA POWER COMPANY

BEFORE THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

HEARING
ON
ACID RAIN

WASHINGTON, D.C.
OCTOBER 4, 1989

STATEMENT OF
W. PAUL SCHMECHEL
BEFORE THE SENATE COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

WASHINGTON, D.C.

OCTOBER 4, 1989

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I am Paul Schmechel, Chairman and CEO of Montana Power Company. Our utility serves 250,000 customers in the western two-thirds of Montana, plus Yellowstone National Park. More than half of our electric power is generated by thermal plants in Montana. Fuel for those plants comes from the mines of Western Energy Company, a subsidiary of Montana Power. Those mines, in southeastern Montana, produce 13 million tons of low sulfur coal annually.

I welcome the opportunity to address portions of the Mitchell-Baucus Acid Rain Proposal and H.R. 3030 (S.B. 1490). Without revision, H.R. 3030 would have devastating effects on the State of Montana, our customers, our company and Montana's coal mining industry.

The problems we perceive with the proposed legislation are these:

First, H.R. 3030 would virtually foreclose expansion of basic industry in Montana.

Second, it could disable the coal mining industry in Montana.

Third, it would impose undue costs on Montana Power and, therefore, our customers.

Fourth, it could force unwarranted distortions in fuel choices by utilities.

We will expand on those points by citing our experiences in Montana, where we have installed sophisticated sulfur dioxide emission controls even though low sulfur coal is used.

In southeastern Montana at Colstrip, my Company and four other utilities own four coal-fired generating plants equipped with wet scrubbers. The first two plants, each rated at 330 MW, were completed by 1976. They attain a sulfur dioxide removal efficiency of 85%, with a resulting emissions level of less than .3 pounds of SO₂ per million Btu.

The second two plants, each rated at 700 MW, completed in 1984 and 1986, remove 96% of the SO₂---resulting in average emissions of only .07 pounds of SO₂ per million Btu. Those plants are among the few in the U.S. operating in a Class I PSD airshed. It took more than six years of exhaustive work to obtain the State and Federal permits for those plants.

The latter two plants cost \$1.4 billion, of which \$500 million, or 35%, was for air quality controls. Translated into customer costs, we calculate air quality controls on these plants add 13 mills to the cost of a kilowatt hour at the busbar.

Clearly, we in Montana already are paying our share for clean air.

CAPS ON SO₂

Under Section 505 of H.R. 3030, all of our coal-fired plants will be affected by an emissions rate cap on SO₂. The proposed legislation requires, beginning January 1, 2001, that all coal-fired plants must meet a 1.2 pounds per million Btu sulfur-dioxide limit. Emissions from our Colstrip plants are much lower than that. Regrettably, H.R. 3030 would penalize existing plants doing better than 1.2 pounds by capping emissions at the 1985 average emission-rate. In 1985, our Colstrip plants performed as follows:

	<u>Lb. SO₂</u> <u>Per Mil.² BTU</u>
Colstrip 1	0.29
Colstrip 2	0.26
Colstrip 3	0.08
Colstrip 4	0.06

This table illustrates that Colstrip 1 & 2 emissions are more than four times lower than the 1.2 pounds limit, and Colstrip 3 and 4 emissions are 15 to 20 times lower.

These low levels are achieved because we installed state-of-the-art scrubber equipment and also because we burn low-sulfur coal. In 1985, Western Energy was producing coal from an area of its Rosebud Mine that had especially low-sulfur coal. So we will be penalized under the emission caps at levels that virtually no other plants in the country will ever be expected to reach. And, we have spent an enormous amount of money in achieving this record. Nevertheless, if we mine coal with a slightly higher sulfur content, which we will do from time-to-time, it would

require operating our plants at less than their rated capacities to comply with the rate caps. This is neither fair nor rational when our plants already are the cleanest in North America.

The thought of adding still more pollution controls to our plants is mind-boggling.

Apart from the impact at Colstrip, the caps would preclude further industrial development in Montana. Because of the state's small industrial base and the remote chance of gaining any major improvement in air quality, economic expansion requiring pollution credits simply could not take place. We do not believe that regional trading of pollution control credits is a practical solution. Other regions will preserve their potential credits for use in their own areas. As well, Public Service Commissions and others will intervene if transfer of credits is attempted.

While there may be opportunities for emission reductions elsewhere in the United States, Montana achieved its reduction before passage of the law. Thus, application of a cap to Montana would, in essence, punish Montana's achievement without compensation for prior accomplishment.

If a credit system must be adopted, let Montana and other "clean" states bank the difference between their current emission levels and their permitted standards.

POTENTIAL NO_x STANDARDS

We also are deeply concerned with the nitrogen oxide provisions of the proposed legislation. The standards aren't defined in H.R. 3030. Instead, EPA is given broad authority to set varying standards. As new NO_x requirements are adopted, retrofitting with unproven technology should not be required. Current

state-of-the-art equipment enables our Colstrip plants to meet limits of less than 0.7 pounds per million Btu making them among the lowest NO_x emitters in the country. There, again, we made a substantial investment to achieve this result.

RE-PERMITTING

The Colstrip plants are subject to Class I PSD airshed requirements. They are located 12 miles north of the Northern Cheyenne Reservation which was designated Class I by the EPA. In the course of permitting Colstrip Units #3 and #4, it was necessary to consider emissions from the town of Colstrip, the Rosebud Mine which fuels the plants, and Colstrip Units 1 and 2, which had been completed earlier. To subject these plants to a repetition of the intense initial permitting process would be wasteful, expensive, redundant and unnecessary. The remedy in this case lies in grandfathering plants already approved by EPA as meeting applicable standards and doing better than standards proposed in H.R. 3030.

FUGITIVE DUST

H.R. 3030 could cause coal mines to be listed as major sources, which would then cause fugitive dust to be counted for PSD increment consumption. While H.R. 3030 exempts coal mines from Class II and Class III PSD increments, impacts on Class I areas would not be exempted. All of the major coal mining in Montana occurs within 25 miles of the Northern Cheyenne Reservation, a Class I area, including Western Energy's mine. In 1989, we expect to produce more than 13 million tons of coal at Colstrip. Modeling work done in 1985 and 1986 indicated that mines with production rates greater than 900,000 tons per year would not meet the particulate requirements within Class I. Changing to a PM-10 measure would help somewhat, but even then modeling results show

that coal mines would be restricted to 3 million tons per year. Thus, without further modification to this section, the Montana coal industry would be devastated. Customers relying on this low-sulfur coal, with boilers custom designed to burn it, will be forced to obtain more distant supplies at greater expense. Because we are a large producer, we are obviously very concerned about this section.

We suggest that any legislation ensure that the fugitive dust exemption also apply to re-designated Class I areas. In Western Energy and for the town of Colstrip, we have taken special steps to keep fugitive dust to a minimum. The Rosebud Mine employs control techniques to restrict dust to the mine site, and air quality monitoring is conducted at numerous sites throughout the area.

CLEAN COAL TECHNOLOGY

Under the legislation, the time for using new coal technology is severely restricted even with a proposed three-year extension to the year 2003. It is doubtful that the limitation will serve the nation's energy needs well. It could rule out any of several technologies that promise to improve our ability to burn coal, the nation's most abundant energy resource.

Among those technologies is magnetohydrodynamics (MHD). This technology permits use of a wide variety of coals; achieves a 50 percent improvement in fuel-use efficiency; and reduces SO_2 and NO_x emissions to extremely low levels, without wasteful power consumption. For example, recent tests of MHD technology have shown 98 percent removal of SO_2 . Coupled with the potential for extremely low emission levels is the fact that one-third less fuel is required to produce a kilowatt hour of electricity. Clearly, MHD could prolong the life of our fossil fuel reserves.

COST SHARING AND FREEDOM OF CHOICE ISSUES

We support the Mitchell-Baucus proposal and H.R. 3030 in two very important aspects. Neither proposal calls for a national kilowatt hour tax. We oppose such a tax to subsidize installation of scrubbers and we oppose any abatement tax on Montana citizens and others who already are paying the price for clean air in their electric bills. They should not have to pay twice.

We endorse and support the provisions allowing electric utilities to choose the most cost-effective methods available to achieve emission goals. Such choices may well involve several options, including fuel switching or blending, coal beneficiation, or clean coal technology. We urge that any legislation assure that sources have total flexibility to achieve air quality standards.

1989 ACID RAIN LEGISLATION

Testimony of
ROBERT ABRAMS
Attorney General of the State of New York

before the
Subcommittee on Environmental Protection
United States Senate

October 4, 1989

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TESTIMONY OF
NEW YORK STATE ATTORNEY GENERAL
ROBERT ABRAMS

New York's people and environment are among the primary victims of acid rain pollution. Over the years, it has contributed to thousands of premature deaths, destroyed our lakes, damaged crops, forests, buildings and statues, and shrouded our cities and countryside in a poisonous haze.

Halting acid rain has been among the highest environmental priorities in New York for nearly 10 years. We have enacted legislation and taken administrative actions to drastically lower emissions of acid rain pollutants within our borders.¹ But action in New York is not enough. We are located near the end of an air pollution pipeline that brings millions of tons of acid rain, air toxics and smog in from other states.

This is a national problem that demands a federal solution. I have appeared before Committees of Congress on several occasions to press for acid rain legislation. In addition, my office, in a coalition of states, citizen groups and Canadian governments, has filed over a dozen citizen suits and judicial review actions against EPA seeking action against acid rain under the interstate,² international,³ tall stacks,⁴ national standards,⁵ and visibility⁶ provisions of the Clean Air Act.

Unfortunately, with the exception of some limited success with the tall stacks and national standards litigation, these parts of the Clean Air Act have proven sadly ineffective and unenforceable against EPA's continuing refusal to reduce acid rain emissions as the statute requires.

2.

I have reviewed a draft of the Mitchell-Baucus acid rain proposal and support it as the best vehicle to eliminate the severe interstate inequity of our national air pollution policies.

I also, however, want to congratulate the President for his leadership. Although the Administration bill (S. 1490) is weaker than the Mitchell-Baucus proposal in important ways, the President's support for a 10 million ton sulfur dioxide reduction and for a cap on future emission growth, is a major breakthrough which I hope will end this frustrating legislative stalemate.

I cannot overemphasize the importance of including growth cap provisions in the new law. The Senate must enact a law that prevents needless increases in electric power consumption from eroding the emission reductions required by these bills. The recent experience with energy efficiency planning in New England demonstrates the enormous potential for conservation to prevent growth in electric power demand. For example, with aggressive investments in energy efficiency, the New England Energy Policy Council estimates that New England states could use 37 to 57 percent less electricity in the year 2005 than utilities originally estimated -- without sacrificing personal comfort or economic development. New York is working toward similar goals. By saving electricity, we can avoid increases in sulfur dioxide, nitrogen oxide, heavy metals, particulate matter and volatile organic compound emissions from electric power production.⁷ An emission cap enacted into law is an important way to assure that energy efficiency gains are captured to the maximum extent possible.

3.

The emission cap concept, however, is under attack in the House and a bill could emerge that would continue wasteful consumption practices and rob us of a long-term acid rain solution. I urge the members of this Subcommittee to strenuously resist all attempts to delete a mandatory emission cap.

The Mitchell-Baucus proposal contains a significant advantage over the Administration bill in regard to control of nitrogen oxides. Nitrogen Oxides are responsible for about a third of the annual acidic deposition in the East, but are particularly damaging because they build up in snow which delivers an enormous nitric acid shock to lakes and streams when it melts. Nitrogen oxides are also a primary cause of smog, fine particle pollution and global warming. In addition, these pollutants injure marine life and degrade the quality of Long Island Sound and other important coastal water bodies.⁸

The Administration's acid rain proposal will, at best, merely halt the growth of nitrogen oxides emissions from power plants and industrial boilers. We need a dramatic reduction.⁹ The Mitchell-Baucus proposal would not only halt emission growth, it would reduce nitrogen oxides by two million tons. I strongly urge the Senate to adopt these stronger Nitrogen Oxide controls for stationary sources, as well as the very important provisions in S. 1630 for reducing mobile source NOx emissions.¹⁰

While I support the emissions reductions embodied in the Mitchell-Baucus proposal, it is by no means clear that they will be enough to protect health and the environment. The provisions of the Administration bill and the Mitchell-Baucus proposal are exceedingly complex. They are based upon many assumptions and

projections about utility behavior, emissions trading schemes and EPA rulemaking actions. The actual reductions achieved may be less than currently projected. Even if fully achieved, these emission reductions will fall short of the 50% reduction in acid rain precursors called for by the National Academy of Sciences.¹¹

For these reasons, Congress should retain and reinvigorate certain existing provisions of the Act that could provide additional relief in case the new acid rain program falls short.

For example, the Act's current interstate pollution provisions, as interpreted by recent court decisions, are clearly inadequate to protect states like New York from upwind chemical bombardment. I recommend that the Senate include in its bill the proposed changes to strengthen existing sections 110 and 126 that were passed by this Committee in 1987 as part of S. 1894.¹² These amendments will provide a safety net to equitably redress any interstate acid rain, air toxics or smog problems that may persist in spite of new control programs.

Finally, I wish to compliment the sponsors of S. 1690 for strengthening the critical citizen suit and judicial review provisions of the Clean Air Act.¹³ Effective public and judicial oversight is necessary to insure that the new Clean Air Act will be fully carried out. Congress must eliminate the jurisdictional quagmire that has allowed EPA to ignore with impunity major parts of the existing law.

We stand today at a critical juncture. At long last we have a President who is giving acid rain control the public focus and priority it deserves. It is therefore urgent for Congress to reach consensus this year to truly protect our nation's air.*

REFERENCES FOR TESTIMONY OF
ROBERT ABRAMS
ATTORNEY GENERAL OF NEW YORK

1. Title 9, Article 19, Environmental Conservation Law, McKinney's New York Statutes, (1984); Title 6, New York Code of Rules and Regulations, subpart 225-1.
2. New York v. U.S.E.P.A., 716 F.2d 440 (7th Cir. 1983); New York v. EPA, 710 F.2d 1200 (6th Cir. 1983); State of New York v. Thomas, 21 ERC 1721 (D.D.C. 1984); State of New York v. Thomas, 852 F.2d 574 (D.C. Cir. 1988), cert denied, 895 S. Ct. 1338 (1989); State of Ohio v. U.S.E.P.A., 784 F.2d 224 (6th Cir. 1986) petition for reh. denied, 798 F.2d 880 (6th Cir. 1986).
3. Thomas v. State of New York, 802 F.2d 1443 (D.C. Cir. 1986), cert denied, 107 S. Ct. 1394 (1987) (reversing 613 F. Supp. 1472 [D.D.C. 1985]); Her Majesty the Queen in Right on Ontario, et al. v. Thomas, D.C. Cir. # 88-1778 (to be argued February 15, 1990).
4. Sierra Club v. EPA, 719 F.2d 436 (D.C. Cir. 1983), cert denied, 104 S. Ct. 3571 (1984); NRDC v. Thomas, 838 F.2d 1224 (D.C. Cir.) cert denied, 109 S. Ct. 219 (1988).
5. Environmental Defense Fund v. Thomas, 870 F.2d 892 (2d Cir. 1989), cert petition pending (reversing EDF v. Thomas, 56 U.S.L.W. 2638 (S.D.N.Y.); NRDC v. Lee Thomas, D.C. Cir. # 87-1438 (to be argued December 14, 1989).
6. State of Maine v. Thomas, 874 F.2d 883 (1st Cir. 1989), affirming 690 F. Supp. 1106 (D. Me. 1988). See also, State of Vermont v. Thomas, 850 F.2d 99 (2d Cir. 1988).
7. New England Energy Policy Council, Power to Share: A Plan for Increasing New England's Competitiveness Through Energy Efficiency, July 1987, page 6. Conservation can lower the future cost of power to American consumers and industry by preventing costly rate increases that would otherwise occur from the construction of new power plants.
8. Fisher, D., Ceraso, J., Matthew, T. and Oppenheimer, J., "Polluted Coastal Waters, the Role of Acid Rain," Environmental Defense Fund, April, 1988.
9. I agree with the recent American Lung Association Report which concludes that this nation has largely ignored the dangers posed by NOx pollution and that "for the sake of health and environmental protection it is time to make NOx control a national priority." "Why NO_x: The Costs,

Consequences and Control of Nitrogen Oxides in the Human and Natural Environment," American Lung Association, Washington, D.C., 1989.

10. The Administration bill contains two other provisions that should not be adopted by the Senate. The tall stacks provision (§ 123) of the 1977 Act is at last beginning to reduce long-range pollution impacts of some power plants. See cases cited in footnote 4. The Administration bill would eliminate these gains and rob us of an opportunity for early reductions in sulfur dioxide pollutants. The Senate should reject these proposed amendments to the tall stack provisions. Congress should also reject the Administration's proposal to postpone, for up to eight years, EPA's duties under § 109 to review and revise the national ambient air quality standards. Although EPA has in the past generally ignored its § 109 obligations, a recent Court decision holds that EPA must make a formal decision regarding the adequacy of the national standards at five year intervals. Environmental Defense Fund v. EPA (cited above at footnote 5). This will force EPA to decide upon the need for a short-term sulfur dioxide standard to protect people from high concentrations of sulfur oxides in the immediate vicinity of plants, and could force EPA to correct well-known deficiencies in the ozone and NO_x standards.
11. Atmosphere-Biosphere Interactions: Toward a Better Understanding of the Consequences of Fossil Fuel Combustion, National Academy of Sciences, 1981; Acid Deposition Atmospheric Processes in Eastern North America, National Academy of Sciences, 1983.
12. See Senate Report No. 100-231, Clean Air Standards Act of 1987, pp. 75, 509, 532-533. In light of the Circuit Court opinions cited in footnote 2, the language of amendment or the legislative history should reaffirm the duty of EPA to make a specific finding under § 110(a)(2)(E) regarding the adequacy of state implementation plans to prevent interstate air pollution. This was probably the intent behind that section and § 126. But the Courts have held that EPA need not make an affirmative finding on this matter either in a § 126 petition proceeding or when approving a state plan to increase air pollution emissions.
13. See, § 309 of S. 1490 amending §§ 304 and 307 of the Clean Air Act. 42 U.S.C. §§ 7604, 7607.

TESTIMONY OF SENATOR PAUL SIMON
BEFORE ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
ADDRESSING PROPOSED LEGISLATION TO
STRENGTHEN AIR QUALITY STANDARDS
OCTOBER 4, 1989

I WANT TO COMMEND THE MEMBERS OF THIS SUBCOMMITTEE FOR YOUR LEADERSHIP ON THE VERY IMPORTANT ISSUE OF IMPROVING AIR QUALITY STANDARDS IN THIS COUNTRY. I WANT ALSO TO THANK SENATOR BAUCUS FOR ALLOWING ME TO COME BEFORE YOU TO ADDRESS ONE PARTICULAR ASPECT OF THE CLEAN AIR LEGISLATION THAT IS BEING CONSIDERED. THE ISSUE I AM SPEAKING OF IS THE PROBLEM OF ACID RAIN.

LET ME ADD AT THIS JUNCTURE, I BELIEVE WE ARE INDEED LUCKY TO HAVE A SUBCOMMITTEE CHAIRMAN IN SENATOR BAUCUS AND A MAJORITY LEADER IN SENATOR MITCHELL WHO HAVE FOR MANY YEARS BEEN CONCERNED ABOUT OUR ENVIRONMENT, ABOUT OUR AIR QUALITY; AND THEY ARE BOTH VERY FAIR WITH RESPECT TO ALLOWING ALL INTERESTED PARTIES TO EXPRESS THEIR THOUGHTS ON THIS BASIC, YET COMPLEX ISSUE.

FOR SOME TIME I HAVE SAID THAT WE NEED TO ADDRESS THE PROBLEM OF ACID RAIN. EVEN THOUGH SOME WOULD ARGUE WE DO NOT YET FULLY

Page 2

KNOW WHAT CAUSES IT, WE KNOW ENOUGH ABOUT THE DAMAGE OF ACID RAIN AND WE SHOULD MOVE TOWARDS FINDING A SOLUTION.

I AM HERE TODAY BECAUSE I WANT TO WORK WITH YOU TO FIND A SOLUTION.

WHILE I AM GLAD TO SEE PRESIDENT BUSH IS WILLING TO WORK WITH US IN ADDRESSING THIS PROBLEM, I DO NOT BELIEVE THE PROPOSAL HE HAS PUT FORTH IN THIS AREA IS THE PROPER APPROACH.

AS OTHERS HAVE POINTED OUT, "THE PRESIDENT WOULD REQUIRE NINE STATES, WHICH CONTRIBUTE ABOUT 51 PERCENT OF THE NATION'S SULFUR DIOXIDE (SO₂) EMISSIONS, TO ACHIEVE AND PAY FOR ABOUT 67 PERCENT OF THE SO₂ REDUCTIONS." THE PRESIDENT'S BILL, HOWEVER, DOES NOT CONTAIN ANY PROVISIONS TO PROVIDE FUNDING ASSISTANCE FOR THOSE STATES, WHICH ARE MAINLY IN THE MIDWEST.

MANY OF THE ISSUES WE ADDRESS HERE IN CONGRESS ARE NATIONAL ISSUES AND WE ADDRESS THEM FROM A NATIONAL PERSPECTIVE. THE ISSUE OF ACID RAIN, OR MORE SPECIFICALLY THE PROBLEM OF POLLUTION CAUSED BY SULFUR DIOXIDE EMISSIONS, IS A NATIONAL PROBLEM AND WE MUST ADDRESS IT ACCORDINGLY -- WITH A SOLUTION OF NATIONAL SCOPE.

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THE BURDEN FOR SOLVING THIS NATIONAL PROBLEM SHOULD NOT BE A DISPROPORTIONATE ONE. IT SEEMS THERE ARE SOME WHO ARE WILLING TO SUPPORT AN APPROACH THAT MAKES THE MIDWEST THE BULL'S EYE ON THE TARGET FOR RESPONSIBILITY. I AM HERE TO ASK THAT IN DRAFTING A SOLUTION, YOU NOT PIT ANY ONE REGION OF THE COUNTRY AGAINST ANOTHER.

TO THOSE WHO WANT TO PIN THE "RECKLESS POLLUTER" LABEL ON THE MIDWEST, I WOULD SAY THAT FROM THE LATE 1970'S TO PRESENT, SIGNIFICANT REDUCTIONS IN SULFUR DIOXIDE EMISSIONS HAVE BEEN ACCOMPLISHED BY THE MIDWEST. IN FACT, I BELIEVE THAT THE MIDWEST, AS A REGION, HAS HAD MORE REDUCTIONS THAN ANY OTHER REGION OF THE COUNTRY. THERE ARE SOME REGIONS WHERE EMISSIONS HAVE INCREASED DURING THE SAME PERIOD.

IT IS IMPORTANT TO NOTE THAT FROM THE MID 1970'S TO THE MID 1980'S SULFUR DIOXIDE EMISSIONS IN ILLINOIS HAVE DECREASED OVERALL BY 37 PERCENT, AND THERE ARE SOME UTILITY COMPANIES IN ILLINOIS THAT HAVE REDUCED THEIR SO₂ EMISSIONS BY MORE THAN 60 PERCENT SINCE 1970.

ALTHOUGH WE NEED TO DO MORE, THERE HAVE BEEN GOOD FAITH EFFORTS TO LOWER EMISSIONS, WITH SOME VERY REAL RESULTS.

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A PROPOSAL THAT DOES NOT ACHIEVE COST EQUITY WILL AFFECT COAL PRODUCTION, COAL COMMUNITIES IN CENTRAL AND SOUTHERN ILLINOIS, RATEPAYERS ALL OVER ILLINOIS AND SEVERAL ELECTRIC GENERATING STATIONS IN 13 OTHER STATES.

ILLINOIS IS THE FIFTH LARGEST COAL PRODUCING STATE IN THE NATION, WITH ANNUAL PRODUCTION AT ROUGHLY 60 MILLION TONS, MOST OF THAT WITH HIGH SULFUR CONTENT.

ILLINOIS EXPORTS TWO-THIRDS OF THE COAL IT PRODUCES AND MUCH OF THAT IS SOLD TO 46 ELECTRIC GENERATING STATIONS IN 13 STATES. THE BIGGEST OF THOSE CUSTOMERS ARE MISSOURI, INDIANA, GEORGIA AND FLORIDA.

I WOULD HOPE THAT THIS COMMITTEE AND THE REST OF MY COLLEAGUES WILL TAKE INTO ACCOUNT THAT IF THE LEGISLATION WE PASS REDUCES COAL PRODUCTION, IT COULD MEAN A LOSS OF 20,000 JOBS IN ILLINOIS, MAYBE MORE -- NOT TO MENTION JOB LOSSES IN OTHER STATES.

THE IMPACT THE COST INEQUITY COULD HAVE WILL BE MEASURED IN NOT ONLY THE TREMENDOUS INCREASE IN UTILITY RATES IN ILLINOIS, BUT THE TREMENDOUS -- SOMETIMES IRREPARABLE -- DAMAGE IT WILL HAVE IN COMMUNITIES ALL OVER CENTRAL AND SOUTHERN ILLINOIS, WHICH HAVE RELIED ON COAL FOR DECADES.

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MANY OF THESE COMMUNITIES ALREADY SUFFER UNEMPLOYMENT RATES THAT ARE HIGHER THAN THE NATIONAL AVERAGE. TO IMPOSE MORE JOB REDUCTIONS COULD BE DEVASTATING.

I WOULD LIKE TO ADD THAT IN DRAFTING A SOLUTION TO THE PROBLEM WE ADDRESS TODAY, WE SHOULD KEEP IN MIND THAT COAL HAS BEEN A MAJOR PART OF OUR INDUSTRIAL GROWTH AND STRENGTH IN THE PAST. I BELIEVE IT WILL CONTINUE TO BE A MAJOR SOURCE OF ENERGY FOR MANY YEARS.

LET ME ADD THAT I AM AWARE OF A PROPOSAL IN THE AREA OF ACID RAIN THAT SENATORS MITCHELL AND BAUCUS HAVE INTRODUCED. I HAVE NOT HAD THE OPPORTUNITY TO REVIEW IT COMPLETELY. BUT I KNOW THEIR BILL WOULD TARGET TWENTY OF THE LARGEST SULFUR DIOXIDE EMITTERS AND HAVE THEM REDUCE THEIR EMISSIONS TO A 1.1 POUND PER MILLION Btu EMISSIONS RATE BY JANUARY 1, 1995.

IT SEEMS TO ME TO BE A MORE VIABLE PROPOSAL THAN THAT OF THE PRESIDENT. IT STILL, HOWEVER, DOES NOT ADDRESS THE UNFAIR FISCAL BURDEN ON STATES SUCH AS ILLINOIS AND THE NEED FOR COST SHARING AS A MEANS OF PREVENTING THAT INEQUITY.

AS I SAID AT THE BEGINNING OF MY TESTIMONY, I WANT TO CONTINUE TO WORK WITH SENATOR BAUCUS, SENATOR MITCHELL AND ALL OF MY

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COLLEAGUES ON IMPROVING OUR AIR QUALITY. I HAVE BEEN DOING THIS FOR SOME TIME AND I AM PROUD OF IT.

I WOULD ASK ONCE AGAIN THAT THIS PROBLEM OF NATIONAL CONCERN BE ADDRESSED WITH A SOLUTION OF NATIONAL PARTICIPATION, AND THAT THE FINAL BILL INCLUDE A COST SHARING PROVISION.

THANK YOU FOR THE OPPORTUNITY TO BE HERE. I LOOK FORWARD TO WORKING WITH YOU.

STATEMENT
of
Dr. Daniel J. Dudek
Senior Economist
ENVIRONMENTAL DEFENSE FUND

before
Senate Subcommittee on
Environmental Protection

concerning
Acid Rain Emissions
Reduction Trading

October 4, 1989

1 INTRODUCTION

Mr. Chairman, Members of the Committee, I am Daniel J. Dudek, senior economist with the Environmental Defense Fund, a national non-profit organization of economists, scientists and attorneys dedicated to identifying environmental problems and developing solutions. EDF deeply appreciates the opportunity to testify here today. My professional background includes a Ph.D. in agricultural economics from the University of California, Davis where my field of study was resource and environmental economics. I have worked for the Natural Resource Economics Division of the Economic Research Service of the U.S. Department of Agriculture analyzing policies for the control of pollution from agricultural operations. I was also an Assistant Professor of Resource Economics at the University of Massachusetts, Amherst where I taught resource and environmental economics. It was during this time that I began my research on the acid rain problem. With the assistance of Joseph Goffman, senior attorney at EDF, I developed a proposal for a mandatory acid rain reduction program that incorporated strong economic incentives for pollution control in the form of marketable emissions permits. This proposal was submitted to officials of the Bush Administration early this year.

We at the Environmental Defense Fund believe that Title V of President Bush's Clean Air bill incorporates several crucial elements of the original EDF proposal and we strongly urge the Committee to report acid rain legislation that relies on precisely those elements, namely, ambitious reduction goals, strict, enforceable legal mandates, market-incentive mechanisms for compliance with those mandates, and an ultimate limit on the emission of acid rain precursors. In fact, we believe that the Committee would be well-served if it looked to Title V as a whole or in major part as its acid rain mark-up vehicle. At the same time, however, we understand Senators Mitchell and Baucus are preparing acid rain legislation that will also impose substantial pollution reduction requirements while using marketable permits as a device for tapping the power of economic incentives for pollution control. We would eagerly support such an approach, and its use in Committee mark-up, as well.

EDF is an active member of the National Clean Air Coalition, whose testimony at these hearings gives a comprehensive overview of pending legislation. In our own testimony we focus on those elements of the President's acid rain proposal which we feel the Committee must include in its legislation.

This testimony also presents the results of an analysis of the economic and environmental impacts of implementing a market-based acid rain control program of the sort described above. The analysis of EDF's original proposal was conducted with a large

scale regional linear programming model of the U.S. coal economy and the electric generating sector (ICF Resources, 1986). The importance of using a market mechanism to solve this problem is illustrated by analyzing the sensitivity of results to alternative emissions reductions allocations, emissions banking, new control technologies, and voluntary industrial trading. Finally, an emissions trading policy is compared with more traditional regulatory programs which target specific sources for reductions without the flexibility to choose control technology or the where reductions would be produced. In conclusion, the importance of developing experience with market-based policies on a broad scale is discussed.

2 OVERVIEW

In our view, the approach embodied in the President's proposal -- and being considered by Senators Mitchell and Baucus -- will lead to a successful and durable acid rain program because it is founded on an iron linkage between environmental protection and powerful economic efficiencies. Tamper with this iron bond and Congress will defeat the goal it shares with the President of ending the acid rain crisis by the turn of the century. The crucial elements which this iron network comprises are: 1) substantial required reductions in sulfur dioxide emissions and emissions of oxides of nitrogen, 2) strict liability for severe, unavoidable penalties for sources that fail to meet their reduction requirements, 3) a nationwide cap on total emissions once required emissions reductions have been achieved and 4) complete flexibility for sources in the means they chose for compliance with their reduction requirements. Such flexibility must include the ability of sources to "trade" emissions reduction credits, which would be earned by any source that reduced its emissions beyond its reduction requirements, to another source that could use such credits, in lieu of on-site reductions, to meet its reduction obligations.

Such a program would offer a permanent, least-cost solution to the acid rain problem while spurring a number of other environmental and economic benefits. Thanks to the limit on the nationwide total of sulfur dioxide emissions, energy efficiency will be called on to play an increasingly important role in the delivery of energy services. As a result, all the pollutants associated with fossil fuel combustion, including carbon dioxide, will either be reduced or see their growth slowed. Since emissions trading will confer an authentic market value on "extra" emissions reductions -- that is, profit for clean-up -- the program will induce technological and emissions and energy management innovation to tap the potential profit. At the same time, maximizing flexibility to the point of permitting emissions trading along with all other legitimate methods of producing

emissions reductions will permit sources to use the least costly methods of compliance. This should lower the overall costs of the entire reduction and maintenance program.

Due to the dynamics of a multi-state sulfur dioxide emissions trading market, emissions trading may provide a form of cost sharing for those areas, such as the the Mid-West, which at one and the same time will have the largest emissions reductions and the greatest opportunities to produce cost-effectively "excess" emissions reductions that could be sold to sources in other regions of the country. Finally, by making sources strictly liable for severe penalties when they fail to achieve required emissions reductions, the program can relieve both sources and the Environmental Protection Agency of overly cumbersome compliance planning obligations. As a result, sources enjoy a greater margin for innovation and enforcement resources can be concentrated on demonstrated wrongdoers subject to virtually automatic sanctions.

3 MECHANICS OF EMISSIONS TRADING

3.1 A Short History

Economists are fundamentally concerned with the allocation of scarce resources. Their paradigms of decision making predict that managers will use variable factors of production up to the level at which the additional revenue generated just equals the additional outlay in costs. At this efficient level of operations, the last unit of the factor just pays for itself. It is easy to see how this decision rule applies to priced inputs and outputs, but it is imperative that it applies to all inputs and outputs whether priced or not. Private decision makers typically employ the disposal services of various environmental media without regard to their value or the damage costs that such use may impose. Thus, land, air, and water resources are overused for disposal activities. Since the consequences of such use are borne by society as a whole, efficient use of these resources means reducing the gap between social and private costs. This is the motivation for government intervention.

Economists have also long argued that government intervention in the marketplace should be limited to a set of justifiable circumstances. One of these is market failure in the case of environmental pollution. There are a variety of well-known remedies for these problems involving specially designed taxes or restrictions on the quantities of pollution which can be legally discharged. The selection of the appropriate policy instrument is dictated by the state of knowledge, technical, economic, and

political feasibility. Of particular concern are the distributional consequences of any policy proposal. Who will gain and who will pay?

Less emphasized has been the relationship between the cost of a program and the particular policy selected to implement it. Those in opposition to policy action frequently cite the difficulties and uncertainties in measuring the benefits of taking action to solve an environmental problem. Rarely is the uncertainty of the cost of policy action mentioned. In fact, costs vary depending upon the policy selected to implement control and these variations may be as wide as the uncertainties in benefits (avoided damages) (see Section 4.2).

3.2 How Emissions Trading Can Work in an Emissions Reduction Program: The Title V Model

When President Bush unveiled his Clean Air bill back in July, he promised that it would "turn ... the power of the marketplace to the advantage of the environment." At a time when the war against pollution has taken on global dimensions, another weapon may be added to our pollution-fighting arsenal. Emissions trading is not a new policy concept. Economists have advocated such measures for many years. In fact, emissions trading first came to the fore as a technique for managing air pollution in the late 1970's. Under President Carter, the EPA first attempted to apply the concept to the pollutants that produce urban ozone or smog. In addition to the frank skepticism and opposing litigations of environmentalists, the EPA "bubble policy" faced a host of technical problems that crippled the policy and produced a record of mixed failure and success. In the acid rain context, though the concept is no different from that first embodied in the bubble policy, emissions trading can be made to work quite easily.

Because current levels of emissions of sulfur dioxide and oxides of nitrogen are producing destructive acidic deposition on forests, lakes and estuaries, the objective of any acid rain program is to reduce, by approximately half, the SO_2 and NO_x emissions of utilities and major industrial sources. Accordingly, each major source will be required to acquire emissions reductions equivalent to the amount by which they exceed a government established baseline by a specific deadline. As long as sources are free to choose how they will meet their control obligations, some sources may find that the total of cost-effective reductions they can achieve exceed those they are required to produce. Other sources may find that meeting their reduction requirements on-site is extremely expensive, or at least more so than for sources in the first group.

Under an emissions trading program, the first group of sources would likely achieve greater amounts of emissions reductions than required. They would be permitted to transfer, in the form of a credit, the increment of reductions between those required and those actually achieved to other sources. By acquiring such emissions reduction credits, the latter would be deemed to have complied with their own reduction requirements as if they had achieved real reductions on-site. Since the credit transferring sources would actually be achieving "extra" emissions reductions equal to the size of the credit, the total amount of pollution reduced would be the same as would occur if each source were required to make reductions on-site.

To make emissions trading workable requires nothing more than an underlying mandatory reduction program of the highest degree of integrity and reliability -- precisely the kind of program legislators and regulators would design, with or without emissions trading, simply to ensure that the program succeeded in bringing about the intended reductions and environmental protection. One additional element is also required: flexibility for sources in the means they choose for fulfilling their reduction obligations. By allowing sources of sulfur dioxide and oxides of nitrogen to "trade" extra emissions reductions, real financial values are created for efforts to reduce pollution -- particularly for investments that result in pollution reductions beyond what is minimally required.

Two elements, both included in Title V, are crucial to both a successful emissions reduction program and a viable emissions trading system: source by source permits that specify emissions limits, expressed in terms of tonnage, for each source and continuous monitoring, and reporting, of the emissions of each source. These features allow the program to fix the reductions under the program and enable the enforcement authorities to determine whether each source has met its reduction requirements.

4 POLICY PERFORMANCE

The basic program proposed by the Environmental Defense Fund to the Bush Administration would use transferrable permits to distribute emission allowances and consequently emissions reductions obligations. The program would use 1985 emissions as a baseline from which reductions would be measured. In order to stimulate the market, the program would operate in 6 phases over roughly a decade. The larger number of smaller steps would give market participants experience with producing reductions, time to make control investments, and time to learn about the market. In addition, the larger number of sources included in the program

would create one of the necessary conditions for successful emissions trading, namely a market with some depth. For the 31 eastern states the 5 phases are:

Phase I (1991-1993) Average emissions equal to 85% of 1985 levels.

Phase II (1994-1996) Average emissions equal to 70% of 1985 levels.

Phase III (1997-1999) Average emissions equal to 55% of 1985 levels.

Phase IV (2000-beyond) Average emissions equal to 40% of 1985 levels.

Phase VI (2000-beyond) Emissions capped at 2000 levels.

For the remaining western states, total utility emissions would be capped at 1985 levels throughout the program.

All utility sources emitting above 0.5 pounds of SO₂ per million BTU (MMBTU). All sources covered by the program would be required to install continuous emissions monitoring systems (CEMS) that would provide an instantaneous record of emissions. Industrial sources are allowed to voluntarily opt into the program for the purposes of trading emissions reductions. They were not included directly in order to avoid overburdening the EPA in its permitting responsibilities and inadequacies in the industrial emissions database. In the early phases of the program, sources committing to the installation of SO₂ control technology receive credits in order to avoid whipsawing the underlying high sulphur coal markets. Sources committing to the operation of control technology in Phase III would be exempt from reduction requirements in Phases I and II.

While the federally issued permits would establish reduction obligations on a source-by-source basis, they would not require the adoption of specific control technologies, nor even the requirement to produce reductions at the regulated source. Rather, the transferability of the emissions reductions would allow utilities to overcontrol at one source and transfer the excess reductions to cover the obligations at another. These emissions reductions would be transferrable within the 31-state region in the East and within the 17-state region in the West. Excess emissions reductions once produced would exist until applied against control obligations through the banking provisions of the program. Banking also facilitates intra-phase averaging and eases compliance for sources in the face of operating uncertainties. By accommodating variations in utility operating conditions and demand, large penalties (up to 4 times marginal cost plus compensating reductions) are politically feasible.

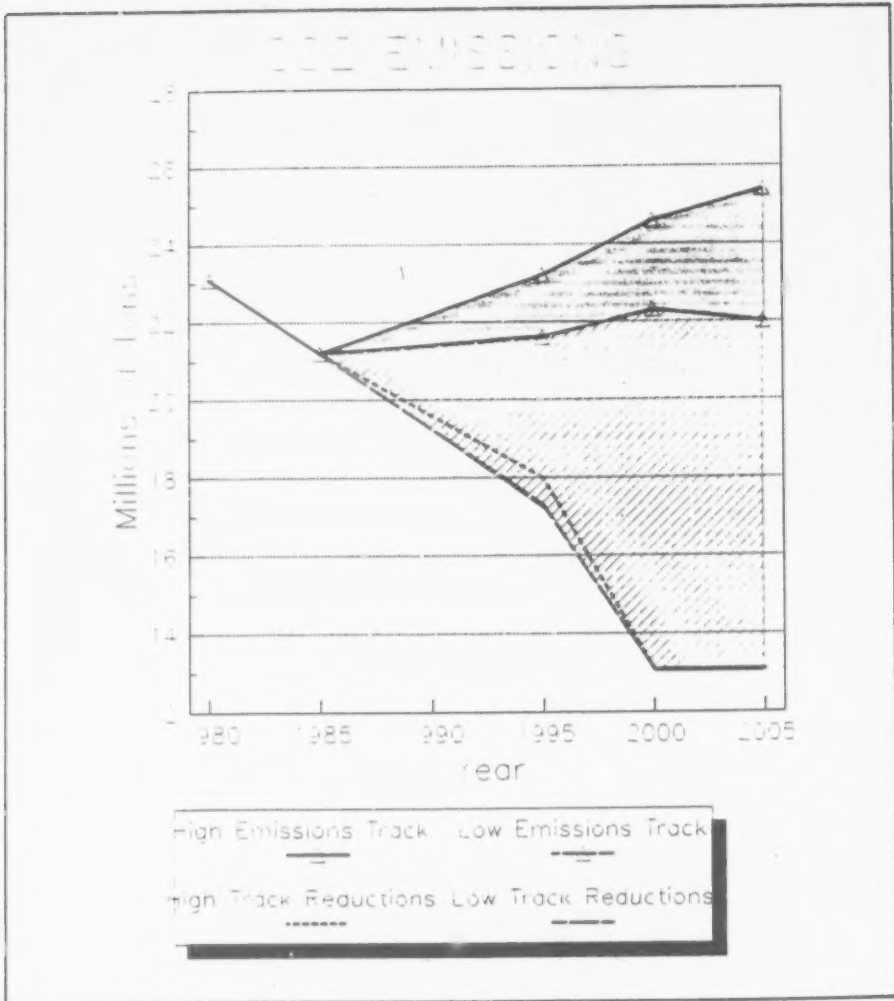
A transferrable permit program for SO₂ emissions was analyzed using EPA's new high and low emissions scenarios which differ by 2.3 million tons of SO₂ by the year 2000. The analysis represents, in part, an attempt to isolate the overall cost-effectiveness of the proposal and its regional impacts. The program analyzed is based on a similar proposal calling for 12 million tons of SO₂ reduction in 10 years, submitted to the Bush Administration by EDF.

For purposes of the analysis, the key features of the program are (see Figure 1):

- * by 1995, reductions from utility sources of 5.2 million tons of SO₂ would be required under the high emissions case versus 4.3 million tons for low emissions.

- * by 2000, reductions of from utility sources 11.5 million tons of SO₂ emissions from the high track and 9.2 million tons if low emissions growth occurs.

ICF assumed that 0.5 million tons of SO₂ reduction from industrial sources would occur by the year 2000 and that a cost-effective reduction of an additional 1 million tons from industrial sources could be achieved.

FIGURE 1. SO₂ Emissions Reductions

4.1 Economic and Environmental Impacts

Using a 31-state Eastern trading region and a 17-state Western trading region, the acid rain control program uses transferable permits to achieve maximum cost-effectiveness. If implemented, the program's annualized cost would be as follows in Table 1.

TABLE 1. Aggregate Acid Rain Program Costs Under Emissions Trading

	HIGH EMISSIONS	LOW EMISSIONS
YEAR	billions of 1988 dollars*	
1995	0.9	0.6
2000	3.1 - 3.8	1.9 - 2.4

* These costs include ICF's estimates of the cost savings from excess emission reduction credit banking, cost-effective industrial emissions trading, and the impact of clean coal technology (specifically, in duct sorbent injection).

KEY HIGHLIGHTS OF THE ANALYSIS INCLUDE:

* Present value of utility costs range between \$31.5 billion under high emissions growth and \$17.2 billion for slower growth. Given the differences in underlying energy demand growth, this \$14.3 billion difference is a good proxy for the impact of energy efficiency improvements if they occurred.

* A dominant feature of the program is the extraordinary degree of interregional equity achieved under a range of emission reduction allocations. In 2000, under the worst case, the median state share of total program costs is 3.7%. Only 4 states would experience costs accounting for more than 6% of the total. The highest state cost share is 11.7%. The equity of this cost distribution decreases the likelihood of any adverse regional economic impact from acid rain control, an important result for the Administration's "flexible freeze" fiscal strategy.

* Utility rate changes, another measure of regional equity, mirror the states' share of regional costs. Almost 90% of all states have rate increases at 3.5% or under. All but one state have rate changes less than 5% and that state has a 5.2% increase. The evenness of these impacts also minimizes the possibility of economic dislocations and any adverse impact of acid rain control costs on regional economies.

* The proposal provides substantially more reductions than many other proposals, since many other proposals, unlike EDF's, fail to provide reductions that would offset forecasted growth in base case emissions. Although the EDF approach requires states that experience growth in the future to secure additional reductions, the analysis shows that interstate trading of emissions reduction credits will allow those states to mitigate significantly any additional costs due to growth.

As Figure 2 illustrates, emissions are regionally concentrated no matter which emissions trajectory is assumed. The high emissions track projections are shown in the larger, bold typeface with the low track figures in smaller, lighter type below. Not surprisingly, the costs of emissions control will also tend to be proportionate to discharges in the absence of subsidies (see Figure 5).

In Figure 3 the net flows of emissions trades between regions is illustrated. Results are presented for two alternative allocations: one using 1.0 pounds SO_2 per mMBTU (shown in the smaller numbers) and one using 0.5 pounds SO_2 per mMBTU (the larger figures). In each case, the numbers are thousands of tons of SO_2 with the figures in parentheses indicating sales (excess emissions reductions) and those without purchases. The issue of cost-sharing and the distribution of costs from an acid rain program have been prominent issues in the debate over the choice of policy. As Figure 4 demonstrates, the burden of costs can be shifted easily through the selection of allocation criteria. Similarly, alternative baselines will shift costs between regions and sources depending upon variations in underlying economic activity.

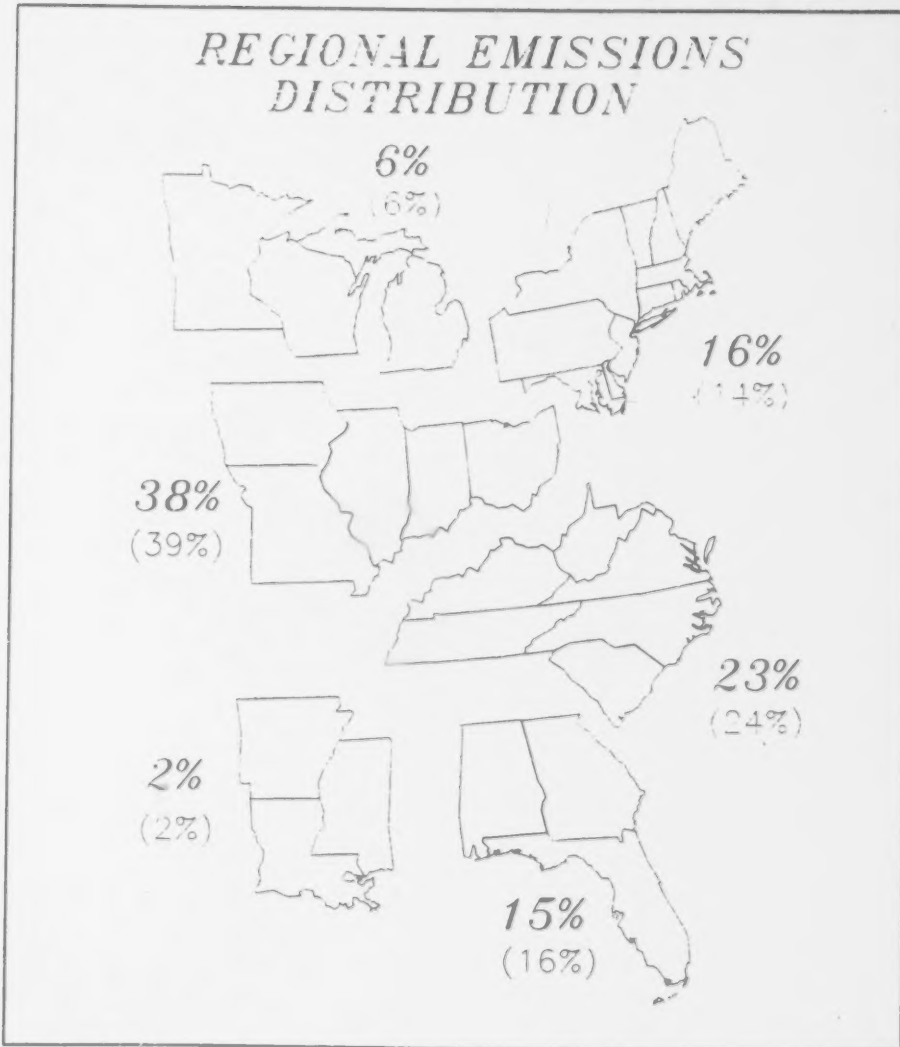
FIGURE 2. Eastern U.S. Regional Emissions Distribution

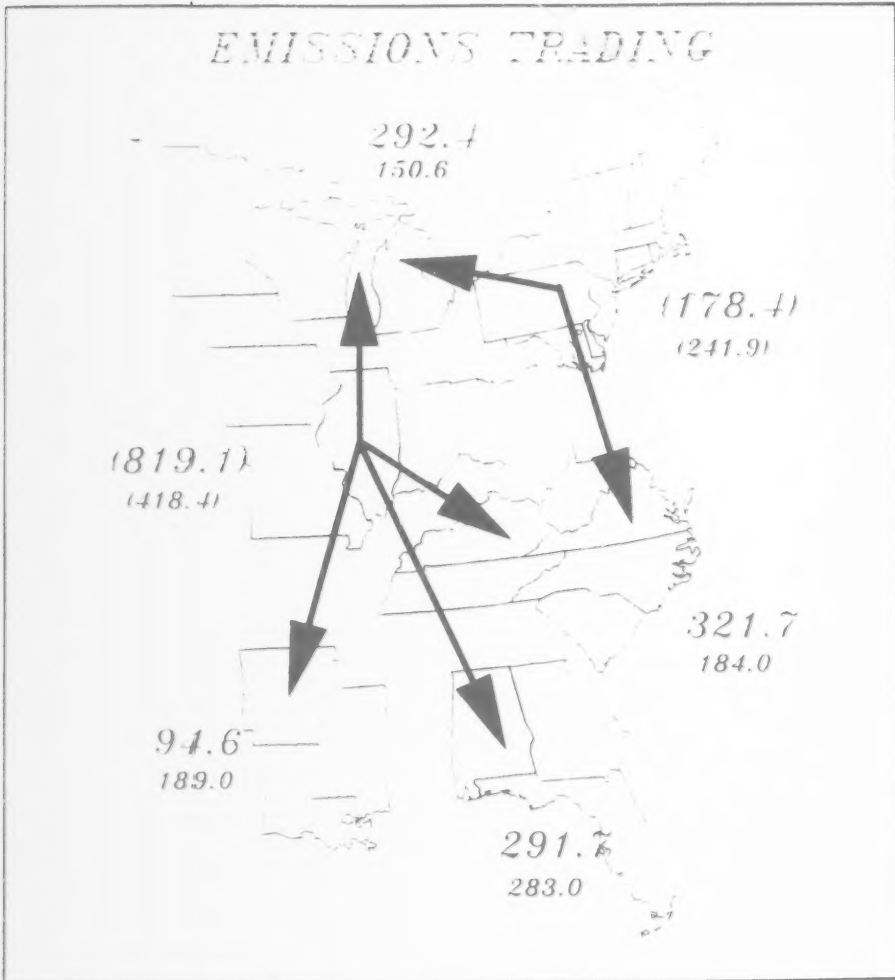
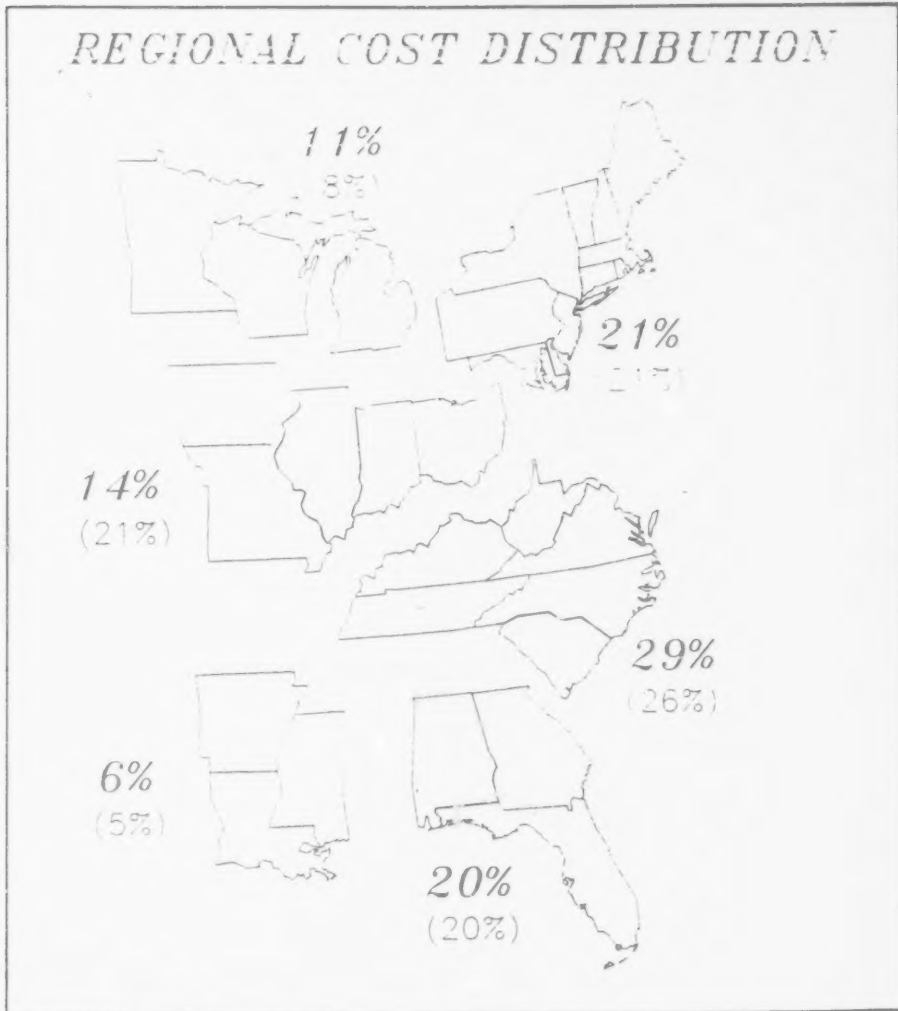
FIGURE 3. Net Regional Emissions Trading in the Eastern U.S.

FIGURE 4. Regional Cost Distribution Under Alternative Initial Allocations



4.2 Targeting Versus Trading

* In the near term, the cost-effectiveness of the program would produce annual cost savings greater than \$1 billion when compared to targeting proposals (see Table 2). The targeting proposal presented in Table 2 uses a first phase requiring the top 20 emitting plants to adopt scrubbers and a second phase using emissions trading. Over twenty years, these cost differences would amount to \$4 - \$5 billion in present value terms. If these cost savings were converted into additional SO₂ reductions, at least another 0.5 million tons of SO₂ could be removed in perpetuity.

TABLE 2. Alternative Acid Rain Program Performance in 1995*PROGRAM COMPARISON - 1995*

	EDF Proposal	Targeted Scrubbing	Least Cost Intrastate
CHANGE IN EMISSIONS	(millions of tons of SO ₂)		
31 East (high)	-4.6	-5.2	-4.8
17 West (high)	-0.6		-0.4
TOTAL U.S. (high)	-5.2	-5.2	-5.2
CHANGE IN COSTS	(billions of 1988 dollars)		
31 East (high)	0.5	2.1	0.7
17 West (high)	0.4		0.3
TOTAL U.S. (high)	0.9	2.1	1.0
CHANGE IN COAL	(millions of tons)		
N. App/Midwst (high)	-61.0		-55.0
C. App/West (high)	56.0		55.0
TOTAL (high)	-5.0		

* Coal market impacts under the program are estimated to range from 14½-19½ shifts away from Northern Appalachian and Mid-western sources (with attendant increases to sources in Central and Southern Appalachia and the West), depending upon underlying

TABLE 3. Alternative Acid Rain Program Performance in 2000*PROGRAM COMPARISON - 2000*

EDF Proposal Targeted Scrubbing Least Cost Intrastate			
CHANGE IN EMISSIONS	(millions of tons of SO ₂)		
31 East (high)	-10.8	-11.0	-11.0
17 West (high)	-0.8	-0.5	-0.5
TOTAL U.S. (high)	-11.5	-11.5	-11.5
CHANGE IN COSTS	(billions of 1988 dollars)		
31 East (high)	3.9	4.3	4.1
17 West (high)	0.5	0.3	0.3
TOTAL U.S. (high)	4.4	4.6	4.4
CHANGE IN COAL	(millions of tons)		
N. App/Midwst (high)	-99.0	-85.0	-100.0
C. App/West (high)	91.0	85.0	100.0
TOTAL (high)	-7.0		

energy demand growth by 1995. By 2000, coal market impacts are broadly similar to those forecasted under equivalent targeting proposals (see Table 3). The level of scrubbing required to protect high-sulfur coal markets (e.g., 40-50 gigawatts by 1995) is likely to be very difficult to attain even if mandated. In addition, because of the proposal's control technology incen-

tives, coal market effects between 1997 and 2000 are significantly lower than those produced by alternative "least-cost" proposals.

TABLE 4. Sensitivity Analysis of Potential Innovations

OTHER COST FACTORS BY 2000

	High Emissions	Low Emissions
	(billions of 1988 dollars)	
Basic Program	4.4	2.8
Clean Coal Technology	-0.4	-0.3
Emissions Banking	-0.5	-0.4
Industrial Trading	-0.4	-0.1
TOTAL	3.1	2.0

Beyond the desire to attain efficient outcomes in the sense of minimizing the costs of attaining any policy goal, there has been increasing acceptance of the desirability of policies which internalize externalities, i.e. policies under which the polluter pays for reducing pollution and compensation for any remaining damage. In part, the advantages of internalization has been seen to accrue largely in terms of changing the relative costs among alternatives and in the stimulation of opportunities for innova-

tion. As the acid rain problem has dragged on and command-and-control solutions were avoided, examples of new technologies have sprung up to illustrate the importance of technical change in shifting cost curves over time.

One of the critical advantages of using an economic method to solve the acid rain problem is illustrated in Table 4. Since the policy is performance based, polluters are not forced to use specific technologies. As a result, institutional innovations like emissions banking and technical innovations like sorbent injection are allowed to develop and penetrate the emissions control market. To evaluate the importance of allowing innovations to be adopted, a sensitivity analysis of ICF's CEUM linear programming model was conducted. As Table 4 illustrates, basic program costs, already reduced due to the efficiencies of the trading system, would likely be reduced further. Allowing emissions banking, cost-effective industrial trading, and sorbent injection (conservatively available in 1997) would reduce basic program costs by a further 30%. While some environmentalists remain unconcerned about potential cost savings, cost savings lower political resistance to otherwise more expensive environmental goals and free up resources to be applied to the solution of other environmental problems.

Opponents to acid rain controls have effectively argued that the scientific understanding of damages and their causes render the potential benefits uncertain while the costs of policy action are both known and incurred in the present. This argument has carefully avoided any mention of any relationship between the cost of policy action and the choice of policy. For acid rain in particular, numerous studies (Elman, ICF Resources) have demonstrated that substantial cost savings (up to 75%) are possible from the use of economic methods when compared to traditional, inflexible regulatory approaches.

5 THE STAKES ON THE TABLE

An emissions trading program based upon transferrable permits of the sort described in this paper has the capacity to transform the electric generating sector. For utilities, long-term strategic planning is encouraged. They are offered an expanded scope of business opportunities through the fungibility of power and emissions created by the trading system. New business opportunities in control technologies, expert systems, emissions brokering and sales are created.

Other critical actors within this system in the United States are the utility regulators who rule on the acceptability of costs incurred by utilities and the rates required to allow cost recovery and profit. These regulators will have an important role in encouraging innovation and risk taking in the pursuit of solutions to environmental problems. In their oversight capacity, they can promote and encourage the evaluation of the widest scope of alternatives in reducing emissions including energy efficiency investments. For investor owned utilities, incentive rate-of-return systems may be required to facilitate the distribution of gains between consumers (rate payers) and shareholders. Rewards for cooperation, initiative and success are key to the system.

For the general arena of environmental policy, successful implementation of this national policy would expand the choice of policy tools. Economic methods for environmental protection currently suffer from a "theoretical" image among policy makers. Emissions trading on the scale proposed in this program would demonstrate, on virtually an international scale, the efficacy of such methods. If we are to solve the increasingly complex problems of atmospheric pollution, we need to tap the on-site expertise of plant managers and operators in developing solutions. We must also engage the powerful engine of technical change by creating incentives and markets for new technologies.

5.1 Implications for Managing Other Global Atmospheric Pollution Problems

As the U.S. and the rest of the world increasingly move to confront the intertwined problems of transboundary atmospheric pollution, the consistency of policy effects across pollutants is of increasing importance. In the case of acid rain, not all policies designed to reduce acid deposition will simultaneously reduce emissions of carbon dioxide. For example, the use of some flue gas desulphurization devices exact an energy efficiency penalty which results in increased CO₂ production. In other cases, incentives to convert existing power plants to use so-called clean coal technologies such as atmospheric fluidized bed combustion, while reducing acid deposition precursors, will nonetheless result in commitment to a new generation of fossil fuel plants.

Given the stakes on the table, we need to improve the range of policies in the policymaker's tool kit, particularly those that use decentralized decision-making. The larger the spatial scale of the problem and the larger the number of sources, the greater the costs of centralized management. When confronted with the need to manage transboundary atmospheric pollution problems, economic methods are a natural choice, but one hampered by

limited practical transboundary experience. If we are to reduce damaging emissions to the atmosphere on the scale that will ultimately stabilize its chemical composition, technologic innovation is critical. As the regulation of CFCs has shown, the path away from stratospheric ozone depletion is paved with technical innovations easing the cost of substitution.

Policy opportunities like the one facing the U.S. for acid rain are critical if global atmospheric management costs are to be reduced. Trading is an excellent model for these strategies since all nations have experience with both trade and the gains it brings. Because trading is ultimately a voluntary activity, nations and firms need not be compelled to participate. Because trading is ultimately built upon a firm regulatory backbone, firms are given the flexibility to compare on-site control strategies with the opportunity to trade either as buyer or seller. For pollutants that also have sinks, such as CO₂, trading encourages investment in sinks as a control strategy. Trading links our common self-interest in global habitability.

6 REFERENCES

- Dudek, Daniel J. and John Palmisano, "Emissions Trading: Why is this Thoroughbred Hobbled?", Columbia Journal of Environmental Law, Vol. 13, No. 2, October 1988, pp. 217-256.
- Elman, Barry, "Economic, Environmental, and Coal Market Impacts of SO₂ Emissions Trading Under Alternative Acid Rain Control Proposals", U.S. Environmental Protection Agency and ICF Resources Inc., March 1989.
- ICF Resources, Inc., "Analysis of EDF's Acid Rain Control Proposal", memorandum to Barry Elman, Tricia Pitton, and Dan Dudek, May 19, 1989, 34 pp.
- Tripp, James, T.B. and Daniel J. Dudek, "Institutional Guidelines for Designing Successful Transferrable Rights Programs", Yale Journal on Regulation, vol. 6, no. 2, 1989, pp. 369-391.
- U.S. Environmental Protection Agency, "Baseline Emissions Projections", May 1989.

ENVIRONMENTAL DEFENSE FUND

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October 24, 1989

Hon. Max Baucus
Chairman, Subcommittee on Environmental Protection
Senate Committee on Environment and Public Works
U.S. Senate
Washington, D.C. 20510

Dear Senator Baucus:

Once again, I would like to thank you for permitting EDF to testify at the Subcommittee's acid rain hearings on October 4th. Due to the press of time, I was unable to address several issues that might be important to the Subcommittee's deliberations. Accordingly, I would like to add some points to my testimony and request that this letter be added to the hearing record.

Several of the questions you asked me reflected the skepticism that many have already expressed about the allowance trading system. That skepticism can be allayed by a consideration of three aspects of allowance-trading: 1) the mechanics, 2) the cost-saving and cost-sharing benefits available from active allowance trading relationships and 3) the ease with which the current legislation can be altered in order to assure that there will be plentiful allowance exchanges and that offsets for new sources will be available and affordable.

* The Mechanics of an Allowance Trade

At the hearing you asked me to describe the actions a utility executive would take when faced with both emissions reduction requirements and the opportunity to engage in allowance trading. After reviewing the technological options available at each location, the executive in our example would quickly determine the cost of each ton of sulfur dioxide his or her company would have to remove from its smokestacks in order to comply with the company's reduction requirements. Let's say that the cost is \$1000 per ton. Before committing to undertake on-site emissions reductions at that price, though, the executive would make an educated guess about what other utilities would have to pay to meet their reduction requirements.

Let's say that our utility is part of a multi-utility power pool that has been "trading" power. That would certainly allow our utility to know a lot about other utilities' practices and costs. Perhaps our utility executive estimates that another utility in the power pool can reduce its sulfur dioxide at \$500 a ton and that, at

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that price, the other utility could remove even more tons than it was obliged to. At this point our utility executive would probably try to take advantage of emissions trading. He would go to the other utility and offer to negotiate a contract to purchase some of the emissions reductions that the other utility could achieve at the lower cost of \$500 per ton. Once the two utilities began negotiations with each other they could determine the best way that they together could achieve the maximum amount of emissions reduced. For example, our utility could offer to help pay for the other utility's investments in low-sulfur fuel or energy conservation or scrubbing technology. With the proper investments the other utility would be able to achieve more reductions than required and would then transfer the extra reductions to our utility. Thanks to this form of emissions trading both utilities together would be able to achieve the necessary total of emissions reductions at the lowest cost.

This example illustrates several key aspects of emissions trading. First, the market for emissions reduction credits or allowances would not be left to speculation. Instead, the utilities themselves could participate in the market with a high level of certainty by entering into comprehensive contracts with each other. After all, the "power pooling" arrangements that groups of independent utility systems have created already is nothing more than a form of trading. Emissions reductions or allowances could be treated in the same way. In fact, emissions reductions would have to be traded in the same fashion. What utility would sell power across state lines without receiving compensation in the form of money or allowances, for the SO₂ and NO_x produced? Long-term emissions or allowance trading contracts between companies, made early in the program, lend themselves to the long-term planning and contracting processes (e.g., fuel contracts, power sales) that utilities already engage in.

Second, the example discussed above demonstrates that allowance trading allows both parties to the contract to reduce their costs in complying with their reduction obligations. Our utility could achieve some of its reductions by purchasing extra emissions reductions or allowances from the other utility at a lower price than our utility would have to pay if it tried to reduce all the required emissions on-site itself. At the same time, the other utility would benefit from an offset of its total costs in the form of the payments it received from our utility.

Third, since these kinds of contracts mean that utilities can realize real cash value and/or cost-savings from producing extra reductions, allowance trading creates incentives that do not otherwise exist for finding innovative ways to cut pollution. "Producing clean air" becomes profitable, and, as a result, investment will be made to do it.

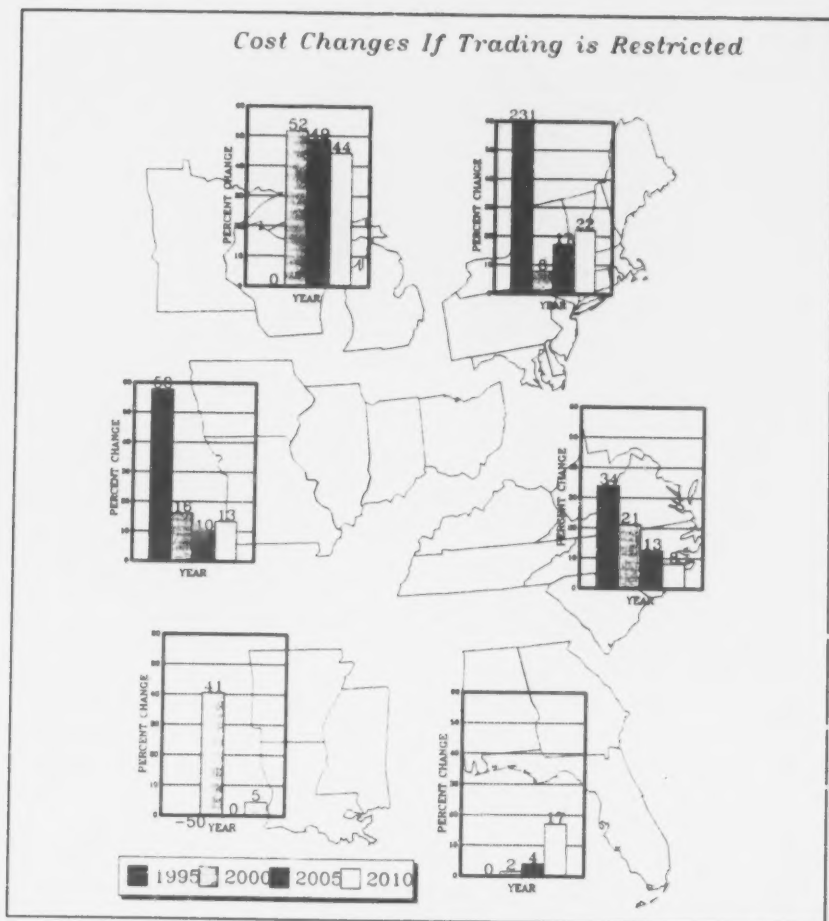
Finally, once contracts for exchanging allowances are entered into, cost-savings are demonstrated and investments in extra emissions reductions are stimulated, a more fluid market will come into being. Utilities will see concrete demonstration of the actual value of creating extra allowances through achieving extra emissions reductions and making these allowances available for lease and sale. As a result, new sources seeking to obtain allowances to offset their emissions will find allowances available in the market.

* Cost-Savings and Innovation

A system that permits individual utilities to enter into contracts that allow one to obtain emissions reductions at a lower price than it would have to pay for reducing its own emissions and another to offset some of its total reduction costs will simply cost less in the aggregate. That is, through allowance trading, the entire national acid rain reduction program will carry a lower price tag than if no such trading occurs or is permitted.

As I stated at last week's hearing, I have developed an analysis comparing the costs, on a region by region basis, of Title V of the President's bill if utilities comply without engaging in robust allowances trading, with the costs of the same program with utilities engaging in active allowances trading. The results are summarized in the bar graphs below. As those graphs depict, costs are generally and substantially increased if trading is restricted. For example, the Midwestern states would experience cost increases of 58% in 1995, 16% in 2000, 10% in 2005, and 13% in 2010. Robust interstate trading would produce exactly these cost reductions for these states. This is much more potent cost sharing than these states are likely to pry from the rest of the Nation.

Cost Changes If Trading is Restricted



When EDF was developing the initial acid rain emissions proposal it submitted to the Bush Administration, we did a similar analysis, comparing our program with one that mandated scrubbing for the 20 largest emitting plants. In addition to quantifying the significant cost-savings available under a trading program (at least \$5 billion difference in present value costs), we identified some of the variables that led to such cost-savings.

For example, the development of new technologies spurred by the incentives created through emissions trading would be much greater under a trading program. One such technology, sorbent injection, could bring many of the benefits associated with so-called clean coal technologies, but at much lower costs (a conservative 10% reduction).

Cost-saving and technologic innovation are the likely results of a successful acid rain allowance trading system. The desire on the part of utilities and public utility commissions to realize these benefits for themselves and ratepayers will ensure that an allowance-trading program will in fact work in practice.

Consider, again, the simple contract example discussed above. Since both utilities in the negotiated trade will be able to realize real financial benefits from contracting with each other to transfer allowances or excess emissions reductions in exchange for payment, the utilities themselves will have powerful incentives to ensure that robust emissions or allowance trading does in fact occur. At the same time, contrary to testimony that public service commissions will encourage "hoarding" of allowances, PSC's will in fact be hard put to disallow such contracts for transferring allowances simply because such transfers bring such obvious benefits to utilities and ratepayers.

Finally, our analysis, as well as the EPA's, reveals another likely effect of interstate emissions trading: interregional cost-sharing. In fact, interstate sales and purchases of allowances can help Mid-Western utilities offset some of their reduction costs without resort to a federal subsidy program. Those utilities, such as those located in the Mid-West, with the greatest reduction requirements are in a position to achieve the greatest reductions, including reductions greater than required, at a relatively low per-ton cost. As a result, utilities in other areas facing higher per-ton costs for achieving required reductions would find it economical to pay Mid-Western utilities to produce extra emissions reductions -- again, at a lower per-ton price -- rather than have to pay for their own reductions. Investments in more-than-required emissions reductions and sales of those extra reductions by utilities in the Mid-West would bring funds into that region. Accordingly, the EPA's analysis of Title V of the President's Clean Air bill shows virtually all Mid-Western states as producing and selling excess emissions allowances. Reallocating allowances away from the Mid-West will reduce the effective cost share inherent in this program and increase the possibility of a federal subsidy with attendant weakening of environmental incentives.

Key to the success of this cost-sharing is an active emissions trading market. The widest possible market is ensured by requiring virtually all sources to participate, not by restricting the market to a few, large, politically vulnerable sources.

* Ensuring Robust Allowance Trading

As you can see, acid rain legislation that not only allows, but promotes, allowance trading can bring about two crucial benefits: lower costs and greater innovation. We urge the Committee, then, not to yield to skeptics and abandon the marketable allowance system, but rather to ensure that such a system works, precisely in order to ensure these benefits.

Two changes to the bill you are considering introducing will help promote a robust allowance trading market. First, the number of sources required to make reductions in Phase I should be expanded to include at least the number specified in Title V of the Administration's bill. With more sources required to reduce in Phase I, the opportunities for individual sources to enter into agreements to generate and transfer additional allowances -- the essence of market trading -- will be greatly increased. In fact, permitting numerous sources to trade on a fully interstate basis will maximize such opportunities.

With these changes even more emissions reductions would occur in Phase I. These added reductions would be produced in response to the opportunity to bank these extra reductions for future use. Banking opportunities not only get emissions out of the air sooner, a distinct environmental plus, they also provide a source of offset credits to supply greenfield source needs under the cap.

Once actual allowance transactions occur and the financial value of a marketable allowance is established incentives to "hoard" allowances, if any such incentives exist, will be negated.

Similarly, if the Committee does conclude that "hoarding" may prevent the robust transfer of allowances or frustrate those new sources required to seek offsets, then the program should include a way of creating a public reserve of allowances that could be made available in an open market not controlled by existing utilities (i.e., existing allowance holders). We suggest a provision that would require the EPA to retain 5% of the allowances each affected source is entitled to under the reduction requirements of the bill. The EPA would then be required to auction those allowances to any source that wanted to participate. This would not only guarantee a supply of allowances even in the event that existing sources engaged in hoarding, but it would also "kick-start" the market in such allowances.

In the alternative, some of these allowances could be reserved for utilities and independent power producers seeking offsets for the operation of new plants. The result is that new source offsets can be produced and the cap maintained without recourse to emissions trading at all. The final element would be a mandate that the EPA distribute, on a pro rata basis, the proceeds of the auction to the sources who were originally entitled to the allowances.

One other option is to enable EPA to create and sell allowances at a fixed price, e.g., \$1500 per ton, to new sources unable to secure offsets through trading. At the end of the year, the Administrator would total these transactions and subtract these emissions on a pro rata basis from existing sources receiving allowances. In each case, the cap is maintained and the market administratively lubricated. Of course, the market really will be robust, but current political arguments mounted by industry necessitate this type of guarantee.

* "Capping" Total Sulfur Dioxide Emissions By Requiring Offsets for New Plants

As Chairman of both the Subcommittee and the Senate's Global Warming Task Force, you are acutely aware of the importance of capping total utility sulfur dioxide emissions once the required reductions have been achieved. Obviously, this is necessary to ensure that the acid rain program actually succeeds in bringing an end to a devastating environmental blight.

At the same time by requiring new sulfur dioxide emissions sources to seek offsets from existing sources, the cap will promote energy efficiency and the attendant benefits of reducing all the pollutants associated with fossil fuel burning, particularly carbon dioxide. Thanks to the offset requirement, utilities and other power producers and energy service providers will look to investments in energy efficiency before seeking to build new power plants.

Interstate emissions trading clearly can play a crucial role in the cap's efficacy in promoting energy efficiency. First, emissions trading provides the ultimate assurance that a cap will not impair economic growth. Regions experiencing high growth in energy demand will be able, through the allowance market, to tap reductions from other regions. Second, since trading implies that sources have maximum flexibility in selecting the means for emissions control, energy efficiency, as opposed to costly control technologies, will be able to emerge fully as the method of choice for emissions reduction. Finally, emissions trading will ensure that the cap, which is strictly necessary for accomplishing the environmental protection goals of the program will not create excessive costs.

Sincerely,

Daniel J. Dudek
Senior Economist

UNITED STATES SENATE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

TESTIMONY OF THE
NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
1102 INTERSTATE COMMERCE COMMISSION BUILDING
P.O. BOX 684, WASHINGTON, D.C.

PRESENTED BY
WILLIAM A BADGER, COMMISSIONER
MARYLAND PUBLIC SERVICE COMMISSION

ON
ACID RAIN LEGISLATION
OCTOBER 4, 1989



Mr. Chairman and Members of the Subcommittee:

I am William A. Badger, a member of the Maryland Public Service Commission. I also serve as Second Vice President of the National Association of Regulatory Utility Commissioners (NARUC) and Chair of the Committee on Electricity, on whose behalf I appear today.

As you are aware, the NARUC is a quasi-governmental, nonprofit organization founded in 1889. Within our membership are the governmental agencies of the fifty States, the District of Columbia, Puerto Rico and the Virgin Islands who are engaged in the regulation of utilities and carriers. More specifically, the State commissions who are members of the NARUC are responsible for the economic regulation of utilities now operating the fossil fuel-fired electric generating stations central to the acid rain debate. These State commissions operate under a statutory mandate of ensuring that the power provided is reliable and reasonably priced, and that the public interest is protected. For this reason, NARUC is uniquely situated to offer some insight into the manner in which acid rain legislation should be administered on a State level.

We deeply appreciate this opportunity to express our views on some of the issues raised in the acid rain debate. In addition, NARUC would like to share with you the results (Attachment A hereto) of a survey (Attachment B) conducted by the NARUC Committee on Electricity to determine the views of individual State commissions on issues raised in the various acid rain legislative proposals. The results of the survey prompted the NARUC Executive

Committee at its July 27, 1989 Summer Meeting to adopt its "Resolution on Acid Rain Legislative Proposals" (Attachment C). A comparison of the resolution and the survey results of the 33 responding States makes it quite clear that there are many controversial issues that divide the members of the Association, just as there are many issues which divide members of Congress.

It is inevitable that an issue as controversial as acid rain abatement, which clearly will affect different States and regions of the country differently, will make it impossible for a voluntary National organization like the NARUC, which operates on the basis of the consensus views of regulatory officials drawn from every State, to speak definitively on matters such as these. And we should make no mistake concerning the cause of the controversy: Federal legislation to reduce the precursors of acid rain, primarily sulfur dioxide (SO₂) and oxides of nitrogen (NO_x), will impose costs, in some cases substantial, on electric utilities and their ratepayers which will fall unevenly. States and regions which are dependent on the combustion of high sulfur fuels to generate electricity have greater exposure to these costs than States and regions which rely on other types of generation.

For these reasons, it is understandable that utility regulators from the former States and regions would favor legislative provisions which spread the costs of compliance. Similarly, it should come as no surprise that regulators from States with little or no direct cost exposure would oppose Federal plans which require their consumers to financially support emission

reduction efforts in other States. The primary concern of both groups is the economic wellbeing of electric consumers who, after all, are responsible for paying the costs acid rain legislation impose on utilities.

With this background, permit me to first identify and summarize certain issues from the survey for which a consensus among the reporting States appears to exist, and which may be informative and useful as you proceed with the debate and drafting of legislative proposals:

A. 63% of the States favor the use of emission rates for determining emission reductions for both SO₂ and NO_x emissions control.

B. 82% of the States indicate a preference for annual targets in achieving emissions reductions.

C. 94% of the States support an averaging among a utility's intrastate units.

D. 69% of the States support an averaging of emission reductions among interstate utility's units.

E. 84% of the States support the use of a credit for conservation.

F. 67% of the States indicate that, with respect to the issue of timing, a State implementation plan should be due two years after enactment.

G. 70% of the States indicate that they favor a two stage compliance requirement.

H. 97% of the States indicate that they favor discretion to determine the manner of achieving emissions reductions.

I. With respect to the issue of emissions trading:

1. 94% of the States favor trading among a utility's units.

2. 59% of the States favor trading among a utility's interstate units, with 14% indicating they are

indifferent.

J. 67% of the States favor provisions that impose dollar penalties for noncompliance.

K. 74% of the States favor the use of federal general tax funds to finance clean coal technology projects.

L. 75% of the States favor a provision whereby State emission reduction target deadlines should be extended on condition of the use of clean coal technology to reduce emissions.

There are, however, a number of issues which the regulatory commissions believe should not be incorporated into acid rain legislation. These are:

A. 81% of the States oppose compliance by each unit in the State.

B. 55% of the States oppose the use of a national subsidy or trust fund to finance control strategies while in excess of 65% of the States appear to oppose the use of a trust fund to subsidize capital or operational costs.

C. In the event that Congress should decide to proceed with financing of control legislation with the use of a trust fund:

1. 62% of the States oppose the use of general tax funds.
2. 57% of the States oppose the use of a fee or tax on coal generation.
3. 82% of the States oppose the use of a fee or tax on nuclear generation.
4. 55% of the States oppose the use of a fee or tax on only oil and gas generation.
5. 74% of the States oppose the use of a tax on fossil fuel purchases as an alternative to the trust fund.

E. With respect to ratemaking issues:

1. 68% of the States oppose the use of a trust fund to protect low income customers.

2. 76% of the States oppose the use of a trust fund to protect the residential customer class.
3. 83% of the States oppose intrastate equalization of rate increases.
4. 77% of the States oppose a provision that States be required to contribute to control costs of States with lower average electric rates but higher emission rates.
5. 71% of the States oppose the use of a trust fund to mitigate rate increases occasioned by fuel switching.

F. 85% of the States oppose prohibitions on compliance through fuel substitution.

G. 97% of the States oppose mandated compliance through a specific technological means such as scrubbers.

H. 79% of the States indicate that they oppose the use of targets such that default costs less than compliance.

Before addressing the questions the Subcommittee has raised, I would like to briefly describe the principles the NARUC believes should be reflected in any acid rain legislation which Congress passes and the President signs into law.

Point one: Acid rain legislation should not impose rigid, command and control requirements on electric utilities or, for that matter, any source of SO₂ and NO_x; rather, we support flexible legislative solutions which "permit electric utilities to achieve compliance [with Federal emissions standards] in the most economic and efficient manner." Simply put, it is in the clear interest of ratepayers if their utilities, working in harmony with State

regulators and environmental officials, are provided the flexibility to develop least-cost compliance plans which meet our common need for cleaner air at a price that consumers can afford. The Committee on Electricity survey results, which indicate strong State commission support for the averaging of emissions reduction requirements, are consistent with the need for flexible, cost-effective control strategies.

Point two: The Association strongly opposes Department of Energy and other legislative proposals which would interfere with and undermine the utility ratemaking process, no matter how well intentioned. For this reason, we have opposed various "clean coal technology" (CCT) incentive regulation proposals which, in our opinion, incorrectly presume that the present regulatory process operates as an impediment to the development of clean coal demonstration projects.

These proposals unfortunately identify three or four issues considered in the discharge of a regulatory ratemaking process which may involve fifty issues that require quantification to develop just and reasonable rates. Such proposals constitute an unnecessary intrusion into the Federal and State regulatory process that would require, without regard to the current financial condition of a company or consideration of other ratemaking issues, that public service companies receive a full cash return on construction work in progress, an incentive cost of capital, accelerated depreciation and protection from prudence reviews by State commissions on a utility's CCT investments. I would

respectfully suggest that these preemptive proposals constitute an unwarranted and unworkable effort to interfere with the regulatory process and should be rejected.

The survey results overwhelmingly support the proposition that the State regulatory commissions are in a better position to evaluate the unique characteristics of their own State with respect to the economics of their respective jurisdictions. Thus, the State commissions should exclusively determine whether rate protection is required for low income customers or residential customers as a class, as well as the need for intrastate equalization or levelization of rate increases.

Such concepts simply do not reflect an understanding of the basic ratemaking process, or that the cost of providing utility service will necessarily vary from company to company. We would respectfully suggest that you also consider that most of the State regulatory commissions are statutory creations serving as agents of State legislatures who determined they possessed neither the time or expertise to discharge a regulatory process. After all, it is the function of regulatory commissions to be responsible and responsive in balancing the interests of ratepayers and investors; a mission that my colleagues and I across the country take very seriously. Therefore, we strongly urge the Congress to ensure that any acid rain legislation it passes be "regulatory neutral."

The NARUC does not oppose utility investments in CCT. These investments are vital in reducing emissions in a cost effective manner, will strengthen our national coal industry, and hopefully,

reduce the United States' dependence on foreign energy supplies. The point is that each State and each utility has unique characteristics ill-suited for a "one size fits all" Federal solution.

Point three: Federal acid rain legislation "should encourage energy conservation as a long range strategy for reducing acid deposition." Provisions must be included in the legislation which give utilities credit for their efforts to operate more efficiently, i.e. use existing facilities to provide utility services at levels demanded by consumers while reducing the use of fossil generation. Our Resolution describes the manner in which conservation and improved efficiency could be taken into account in the legislation; namely, the establishment of tonnage caps for utility emissions, or the use of emission rates which take into account the effect of utility efficiency programs. At this point, I should note that there is a lively debate within the Association on this issue which is reflected in the results of our survey: some regulators, particularly those in States which will need to add new generating capacity, tend to favor a system of emission rates, while other commissioners who foresee little new construction in their jurisdictions prefer a tonnage cap approach. Despite this debate, the Association is united around the fundamental issue that utility conservation and efficiency programs must be taken into account in acid rain legislation. Indeed, there is probably no better near-term or long-term strategy for both reducing utility emissions and moderating the impact of increased

costs on consumer electric bills.

These then are the three basic principles we urge you to consider as you move forward with this legislation: flexibility, regulatory neutrality, and promotion of utility efficiency. As the results of our survey make clear, there is much disagreement about the details of a preferred approach to acid rain legislation, but there is basic consensus around these three important points. I would like to move on now to address some specific issues raised by the various pieces of legislation now before the Congress.

1. Timing of control requirements: A clear majority of the State commissions responding to the NARUC survey favor a phased approach to acid rain controls. Specifically, 70% believe a two stage program is desirable. A plan for phased compliance is recommended for a number of reasons. It provides utilities and their regulators some time to plan their compliance strategies before the most stringent reduction standards take effect. It will give States which are in the process of developing programs to improve utility efficiency the time to understand and measure the emissions reduction benefits such programs will inevitably provide. Utilities which need to build or buy new generating capacity will also be able to more readily assess the impact of their plans on their emissions profile before the most stringent standards apply.

In either case, a phased approach will enhance the ability of the companies to develop cost effective compliance programs which minimize ratepayer impacts. The support of the NARUC members for

phased reductions is clearly consistent with our first principle favoring flexible legislative requirements. As you consider the merits of a phased approach, we would request that you recognize that the implementation of any program will be complicated by reason of solid waste disposal issues, possible coal market responses, and the availability of control equipment.

2. Cost impact of control requirements: The NARUC has performed no independent nationwide analysis of the costs of complying with any of the proposed acid rain bills. However, as I mentioned earlier, it is clear that the costs of complying with any of these proposals will not fall evenly; some States and regions have greater cost exposure than others. In that connection, 77% of the States responding to the survey indicate that they should not be required to contribute to control costs of States with lower average electric rates but higher emission rates. Many regulators believe that individual States should be responsible for financing their own control strategies, since to do otherwise would place some States in the unhappy circumstance of not only having already paid for their own control program, but being required to finance other States as well.

However, there is now no consensus within the NARUC on whether or not there should be a mechanism in the legislation to spread compliance costs beyond the States and regions most severely affected. We are in the process of securing the responses from the remainder of the States and will provide the results for all respondents as soon as they are available. According to the

results of our survey as it now stands, 55% believe that a national subsidy or trust fund is undesirable, while in excess of 65% of the States believe that a national subsidy or trust fund should not be utilized to finance control strategies.

Therefore, the NARUC has no specific solution to offer to the cost allocation and recovery issue, other than to "affirm its commitment to the concept of a clean environment and acid rain programs, provided they are carried out equitably and are cost effective to society." I fully expect that the individual States, through their regulatory commissions and other officials will provide the Subcommittee with substantial comments about the fairness of the various bills and their cost impact. As an organization seeking to reflect the clear views of all of its members, the NARUC is at this time unable to do so.

3. Economic impact of control requirements: The enactment of legislation to control the emission of acid rain precursors by electric utilities will inevitably cause economic dislocations. No matter how worthy the purpose, the imposition of billions of dollars of compliance costs on a national economy confronting aggressive foreign competition will create economic changes which we cannot now begin to predict. Regardless of the individual State we might represent, regulators are concerned about the broader effect any of the acid rain bills will have on all sectors of the economy, including the coal mining industry.

It seems clear that a reasonable emissions level must be determined, for if coal suppliers are unable to satisfy such

standards, the alternative may only be an expensive technological retrofit. This offers the unhappy prospect of a potential declining demand for high sulfur coal and likely adverse impact on the economies of regions involved with its production. It follows, we believe, that as emissions limits become more stringent, a more limited number of suppliers will likely enjoy market power, and may use that power to price energy supplies at levels that approach the alternative costs of technological retrofit.

To mitigate the possible adverse effects in coal markets, occasioned by the enactment of acid rain legislation, the use of high sulfur coal could be enhanced by the implementation of an aggressive clean coal technology program. If provided adequate time for commercial development, CCT projects such as integrated gasification combined cycle technology could provide continued demand for high sulfur domestic coal while achieving low emission rates. The difficult issue that you confront is whether we are willing to impose extra costs on utility ratepayers and/or taxpayers, and the economy at large (i.e. compliance costs in excess of those required by a least-cost strategy) in order to mitigate mining employment impacts.

On this point, it seems appropriate to note 97% of the States oppose legislation which mandates compliance with emission reduction standards through specified technological means such as scrubbers or other innovative technologies.

4. Clean coal technologies: It is the NARUC's position that acid rain legislation enacted by the Congress "should encourage the

development and application of clean coal technologies." CCT should therefore be available as a compliance strategy and compliance extensions should be provided for such utility investments.

NARUC does not propose modifications to the current CCT program, but as earlier discussed, would oppose modifications which would interfere with the ability of regulatory agencies, including the Federal Energy Regulatory Commission, to determine just and reasonable utility rate levels. In that regard, we note that CCT incentive proposals would apply only to wholesale transactions which constitute less than 20% of all utility sales. In recent years, utilities have made continuing efforts to shift regulation of their rates to the Federal level for the purpose of obtaining more favorable treatment. These CCT proposals would create further incentives for such forum shopping, and therefore, the NARUC strongly opposes CCT ratemaking provisions on both the retail and wholesale levels.

In our view, the current program of DOE grants for CCT investments, despite some early problems, is worthy of continued congressional support. As our survey results reflect, 74% of the respondents find the use of general Federal revenues to fund CCT investments to be desirable.

5. Conservation: As the NARUC Resolution describes and as I mentioned earlier, the Association strongly supports legislative provisions which encourage conservation and improved energy efficiency. As the members of the Subcommittee may know, many

State commissions have implemented or are in the process of developing integrated resource plans for their respective utilities--plans which seek to improve the efficiency of utility operations by balancing both supply and demand side alternatives in ways that ensure that utility services are provided at the lowest cost.

We fully expect that these programs will not only provide economic benefits for utilities and their ratepayers, but also will produce favorable environmental effects in the area of acid rain emission reductions as well as global warming. In our view, a credible acid rain control program must recognize and give utilities and their ratepayers credit for the positive environmental outcomes that integrated resource plans and other conservation programs produce.

I have no specific recommendation for the best legislative mechanism to credit and promote utility conservation and efficiency programs. As I have noted, 84% of the State commissions find an explicit conservation credit to be a desirable provision of acid rain legislation.

6. Inclusion of nonutility sources: While the NARUC did not squarely raise this issue in its survey, I am confident that most, if not all, State regulators would favor enactment of acid rain legislation which does not single out electric utilities as the sole source of all emission reductions. I base this conclusion on the fact that 74% of the States believe that the application of the legislation only to steam generating units for the purpose of

calculating Statewide emissions rate averages is undesirable. Therefore, the coverage of the legislation should be broad enough to include all sources of SO₂ and NO_x which contribute to the problem. In this regard, the Subcommittee may wish to address the concept of bubbling whereby industrial and utility unit emission rates are averaged, particularly where such a process would reduce compliance costs while achieving target reductions..

As the NARUC Resolution states, the Association supports acid rain control programs "provided they are carried out equitably." It is hardly equitable for one category of sources to be required to bear the entire burden of the Nation's efforts to address this problem when other sources escape responsibility for the costs of reducing their own emissions. Clearly, those who suffer the consequences of acidic precipitation do not care whether an electric utility or some other source is the cause of their problem.

Therefore, it would be NARUC's recommendation that any legislation should cover all sources of emissions, including nonutilities. Further, nonutility sources should be subject to the same emission reduction requirements as electric utilities.

7. Emissions cap: According to the Committee on Electricity survey, 63% of the State commissions appear to support the use of emission rates over the use of tonnage caps. The survey responses suggest some division among the States since only 47% of the State indicated they oppose the use of tonnage caps. As you address this difficult issue, we should be mindful that the choices will vary

with the circumstances unique to each State. For example, an emission rate approach will be favored by certain regions of our nation to permit reasonable economic growth, while other States that have enjoyed relatively little load growth might select a tonnage cap to be the least expensive control methodology. Similarly, those companies that have generating plants which are high emitters and nearing the end of their economic life may determine that a tonnage cap strategy might be more appropriate.

8. Emissions trading: A program which includes complete intra and interstate trading or emissions offsets has the potential to reduce the costs of acid rain controls. According to our survey, State regulators strongly support legislative provisions establishing a system of emissions trading. Approximately, 94% of the State commissions consider trading within a utility system to be desirable, while 92% of the States favor the use of intrastate trading and 59% find interstate trading to be desirable in designing acid rain legislation.

These results are consistent with the NARUC Resolution's call for the development of an implementation strategy "which would permit electric utilities to achieve compliance in the most economic and efficient manner." Indeed, as I described earlier, one of the major principles underlying the Association's position on acid rain legislation is flexibility and cost effectiveness. A trading system would further this goal by enabling utilities to pursue strategies which provide the greatest reductions at the lowest cost.

Of course, emissions trading presupposes that there is a market through which a source can transfer its legal obligation to reduce emissions to another source which can achieve the same reductions more economically, at least in the cases of intrastate and interstate trading between unaffiliated companies. I have no specific recommendations for the structure or operation of such a market except one: any trading system established in the legislation must be workable. This means that the system must take into account the fact that the primary participants in this market--electric utility sources--are regulated by the State commissions and the FERC. Therefore, utility decisions on whether and how to participate in an emissions trading system will be subject to regulatory scrutiny, just as other utility decisions are now regulated.

The Administration's proposal to establish marketable emissions permits would create new "utility property" in the form of emissions allowances of potentially great worth. The bill assumes that such allowances will be freely tradeable once utilities "create" enough of these allowances to support a market in which the builders of new fossil-based capacity can obtain needed allowances at reasonable cost. State regulators are not yet convinced that the assumptions underlying the Administration's plan are correct. For example, there appears to be a serious question whether such a market could develop because of the manner in which the emission credits are computed with reference to the emission cap. The inclusion of tonnage cap provisions will create a strong

incentive for State regulatory commissions, through the exercise of the evidentiary process, to direct utilities to retain such credits to accommodate future economic growth within the utility system. In addition, regulators will ensure that utility purchasers of emissions credits pay no more than the cost of alternative methods of compliance, i.e. avoided costs of the control strategy.

To accomplish these objectives, a State could file a plan which provides details on the manner by which it intends to comply with the emissions reductions requirements of the legislation. Under this approach, States would retain the complete authority to determine the extent that such emission credits will be created, as well decide issues relating to their inter- or intra-state transferability. This will be particularly important, since the cost associated with the generating plant which gave rise to the emission credits was paid for by ratepayers under a State administered regulatory process.

While we believe that the bill is worthy of serious consideration as the legislative process moves forward, we urge the Congress recognize the complexity of designing such a system to ensure that the trading system fully reflects the regulated status of electric utilities. It should be recognized that our nation's energy requirements, for the most part, are provided through a highly coordinated power pool system process. Today, these power pool systems are operated on a purely economic dispatch basis with loading changing every 60 to 90 seconds. Thus, it seems clear,

that such systems will have to be reexamined and possibly restructured to provide for and balance economic as well as environmental concerns. Moreover, the legislation must not interfere with the ratemaking process at either the State or Federal levels.

In closing, I wish to express my deep appreciation for the Subcommittee's kind invitation to testify here today. After years of legislative stalemate, it now appears that there will be acid rain legislation, a direction that NARUC supports. We pledge our continued assistance as you proceed with this difficult debate. We welcome the opportunity to join with the Federal government, the electric utility industry, consumer representatives and the environmental community in a joint partnership to address the Nation's acid rain problems. NARUC respectfully requests that State regulators be part of the solution, and further, be allowed to retain the flexibility to address these problems in light of our respective State economic conditions and circumstances unique to our ratepayers and citizens.

Thank you for your time and attention.

Resolution on Acid Rain Legislative Proposals

WHEREAS, Congress is considering a number of legislative proposals which are intended to amend the Clean Air Act, which has remained unchanged since 1977; amendments designed to moderate the impact of "acid rain" by limiting the emission of sulfur dioxide, oxides of nitrogen, consistent with efforts to reduce carbon dioxide; and

WHEREAS, The enactment of such legislative proposals will require electric utilities to undertake substantial expenditures to achieve federally mandated emission reduction targets within the states; and

WHEREAS, The costs associated with electric utilities implementing such a program will be supported by electric utility ratepayers; and

WHEREAS, These legislative proposals should provide the states with sufficient authority to develop the most efficient implementation strategy which would permit electric utilities to achieve compliance in the most economic and efficient manner; and

WHEREAS, These legislative proposals may establish funding mechanisms to finance a pollution abatement program that improperly encroach upon the authority of state Commissions to establish just and reasonable retail electric rates; and

WHEREAS, The adoption of any legislative proposal should encourage energy conservation as a long range strategy for reducing acid deposition by requiring energy conservation credits either by requiring tonnage caps, which inherently credit conservation, or through emission rates if they account for mBtus avoided by programs of energy efficiency improvements; and

WHEREAS, These legislative proposals should encourage the development and commercial application of clean coal technologies; now, therefore, be it

RESOLVED, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), assembled in its 1989 Summer Committee Meeting in San Francisco, California, affirms its commitment to the concept of a clean environment and acid rain programs provided they are carried out equitably and are cost effective to society; and be it further

RESOLVED, That policymakers should consider the NARUC survey results contained in Attachment A to ensure sound environmental solutions and policies and achieve an appropriate balance between benefits and costs of such a program.

Sponsored by the Committees on Electricity and Energy Conservation
Adopted July 27, 1989

**NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
COMMITTEE ON ELECTRICITY
ACID RAIN SURVEY**

JULY 24, 1989

ISSUES	PERCENT RESPONSE
EMISSIONS REQUIREMENT	
1. Rate Standard-SO ₂ -NO _x	63%
2. Average Annual Rate Target	82%
3. SO ₂ , NO _x and CO ₂ reductions should be approved in a coordinated fashion	70%
APPLICABILITY	
1. Oppose use of only steam generating units in calculation of Statewide emissions rate average	77%
2. Oppose imposition of specific unit compliance	81%
3. Averaging among a utility's intrastate units	94%
4. Averaging of emissions reductions requirements among interstate utility's units	69%
5. Credit for conservation	84%
TIMING	
1. State implementation plan due two years after enactment	67%
2. Two stage compliance requirement	70%
PAYMENT	
1. Oppose use of national subsidy or trust fund	55%
2. Oppose tax on fossil fuel purchases as alternative to trust fund	74%
COMPLIANCE STRATEGIES	
1. State discretion to achieve emissions reductions	97%
2. Emission Trading	
a. Among utility's units	94%
b. Intrastate	92%
c. Interstate	59%
3. Compliance through fuel substitution	85%
4. Oppose mandated technology	97%

ISSUE

PERCENT
RESPONSE

DEFAULT

- | | | |
|----|---|-----|
| 1. | Use of such provision | 52% |
| 2. | Oppose use of targets such that default costs less than compliance | 79% |
| 3. | Monetary penalties for non-compliance | 67% |
| 4. | Oppose State being in default if EPA fails to approve State implementation plan | 75% |
| 5. | Inaction by EPA constitutes approval of State implementation plan | 88% |

REGULATORY RESPONSIBILITIES

- | | | |
|----|--|-----|
| 1. | States required to develop a comprehensive implementation plan | 91% |
|----|--|-----|

INNOVATIVE TECHNOLOGIES

- | | | |
|----|---|-----|
| 1. | Right of State to impose generation fee to promote innovative technologies | 68% |
| 2. | Use of Federal general tax funds to finance clean coal technologies projects | 74% |
| 3. | Oppose imposition of requirements to extend regulatory incentives for clean coal technology investments | 57% |
| 4. | Oppose State being in default if innovative technology does not achieve expected emission level | 68% |
| 5. | Extend target deadlines on condition of use of clean coal technology to reduce emissions | 75% |

RATEMAKING

- | | | |
|----|---|-----|
| 1. | Oppose use of EPA as a ratemaking authority | 97% |
| 2. | Oppose use of trust fund to protect low income customers | 68% |
| 3. | Oppose use of trust fund to protect one class of utility customers (e.g. residential) | 76% |
| 4. | Oppose intrastate equalization of rate increases | 83% |
| 5. | Oppose States being required to contribute to control costs of States with lower average electric rates but higher emission rates | 77% |
| 6. | Oppose use of trust funds to mitigate rate increases occasioned by fuel switching | 71% |

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
COMMITTEE ON ELECTRICITY
ACID RAIN CONTROL LEGISLATIVE PROPOSALS
SURVEY RESULTS

Attachment B

August 25, 1989

STATES RESPONDING: 33

	STATE POSITION - %		
	FAVOR	OPPOSE	INDIFFERENT
A. TARGETS			
1. Tonnage Caps-SO ₂	44	47	9
2. Tonnage Caps-NO _x	44	50	6
3. Rate Caps-SO ₂	63	28	9
4. Rate Caps-NO _x	63	31	6
5. Monthly Targets	13	75	12
6. Annual Targets	82	6	12
7. Tonnage reductions determined on 1980 Base Year	43	43	14
8. Tonnage reductions determined on 1985 Base Year	38	41	21
9. SO ₂ , NO _x and CO ₂ reductions should be approved in a coordinated fashion	70	17	13
B. APPLICABILITY			
1. Separate treatment of utility and non utility sources in calculation of SO ₂ and NO _x reductions	37	50	13
2. Only steam generating units in calculation of statewide emissions rate average	13	77	10
3. Compliance by each unit in the state	13	81	6
4. Averaging among a utility's intra-state units	94	6	

		STATE POSITION - %		
		FAVOR	OPPOSE	INDIFFERENT
5.	Averaging of emissions reductions requirements among interstate utility's units	69	22	9
6.	Compliance by each plant in the state, allowing plantwide averaging	29	61	10
7.	Credit for conservation	84	6	10
C.	TIMING			
1.	State implementation plan due two years after enactment	67	13	20
2.	Multistage compliance requirement			
a.	Two stages	70	7	23
b.	Three stages	47	30	23
c.	Four stages	24	45	31
D.	PAYMENT			
1.	Use of national subsidy or trust fund to finance control strategies	45	55	
2.	Use of trust fund to subsidize capital costs			
a.	25%	21	66	13
b.	50%	29	65	6
c.	75%	17	76	7
d.	100%	13	80	7
3.	Use of trust fund to subsidize operation costs			
a.	25%	20	70	10
b.	50%	13	77	10
c.	75%	7	86	7
d.	100%	10	83	7

	STATE POSITION - 1		
	FAVOR	OPPOSE	INDIFFERENT
4. Financing of trust fund			
a. <u>General tax funds</u>	31	62	7
b. <u>Coal generation</u>	40	57	3
c. <u>Nuclear generation</u>	18	82	
d. <u>Oil and gas generation</u>	41		4
e. <u>Emission rates</u>	52		6
5. Tax on fossil fuel purchases for acid deposition and ozone control as alternative to trust fund	22	74	4
E. <u>SOCIAL RATEMAKING</u>			
1. Use of trust fund to protect <u>low income customers</u>	25	68	7
2. Use of trust fund to protect one class of utility customers (e.g. <u>residential</u>)	17	76	7
3. Intra-state equalization of rate <u>increases</u>	10	83	7
4. States required to contribute to control costs of states with lower average electric rates <u>but higher emission rates</u>	16	77	7
5. Use of trust funds to mitigate rate increases occasioned by <u>fuel switching</u>	23	71	6
F. <u>COMPLIANCE STRATEGIES</u>			
1. Discretion of the states to determine manner of achieving <u>emissions reductions</u>	97		3

		STATE POSITION - %		
		FAVOR	OPPOSE	INDIFFERENT
2.	Emissions Trading			
a.	Among utility's units	94	3	3
b.	Intrastate	92	3	5
c.	Interstate	59	27	14
d.	Only among participants in power pool	31	46	23
e.	SO ₂ and NO _x traded inter- changeably	44	32	24
3.	Prohibitions on compliance through fuel substitution	9	85	6
4.	Mandated compliance through specified technological means (e.g. scrubbers or innovative technologies)	3	97	
5.	Force majeure provision pro- hibiting early termination of existing coal contracts due to enactment of legislation	26	45	29
G.	DEFAULT			
1.	Use of such a provision	52	22	26
2.	Targets such that default cost less than compliance	3	79	18
3.	Require compliance by every utility unit	21	67	12
4.	Dollar penalties for non- compliance	67	17	16
5.	State in default if EPA administrator fails to approve state implementation plan	22	75	3

		STATE POSITION - %		
		FAVOR	OPPOSE	INDIFFERENT
H.	STATE RESPONSIBILITIES			
	1. States required to develop a comprehensive implementation plan	91	9	
I.	EPA ADMINISTRATOR RESPONSIBILITIES			
	1. Use of EPA as a ratemaking authority	3	97	
	2. Inaction by EPA constitutes approval of state implementation plan	88	12	
J.	TREATMENT OF RISK TAKING			
	Innovative Technologies and Research and Development			
	1. Right of state to impose generation fee to promote innovative technologies	68	10	22
	2. Use of federal general tax funds to finance clean coal technology projects	74	10	16
	3. States required to extend regulatory incentives for clean coal technology investments	33	57	10
	4. State in default if innovative technology does not achieve expected emissions levels or rates	26	68	6
	5. State emission reduction target deadlines should be extended on condition of use of clean coal technology to reduce emissions	75	25	

TESTIMONY OF
GEORGE A. DAVIDSON, JR.
CHAIRMAN AND CEO
CONSOLIDATED NATURAL GAS COMPANY
ON BEHALF OF THE
AMERICAN GAS ASSOCIATION
AND THE
INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
ON
ACID RAIN PROPOSALS

October 4, 1989

Mr. Chairman and Members of the Subcommittee:

I am George A. Davidson, Jr., Chairman and CEO of Consolidated Natural Gas Company, one of the nation's largest integrated natural gas systems.

I am speaking on behalf of the American Gas Association (A.G.A.) and the Interstate Natural Gas Association of America (INGAA). A.G.A. is a national trade association comprised of some 250 natural gas distribution and transmission companies serving over 166 natural gas consumers throughout the United States. INGAA is a national trade association representing the interstate natural gas pipelines of the United States and the inter-provincial pipelines of Canada. I appreciate this opportunity to appear before the Subcommittee to discuss the views of the

natural gas industry regarding the acid rain bills pending before Congress.

SUMMARY

The natural gas industry supports Title V of S. 1490, the Administration's acid rain legislation, because it will, among other things, permit states and utilities the flexibility to achieve sulfur dioxide (SO_2) emission reduction goals in an efficient, cost effective manner.

The increased use of natural gas is one solution to the problem of acid deposition. When combusted, natural gas emits virtually no SO_2 and about one-third the nitrogen oxide (NO_x) emissions of coal. Ongoing research into gas/coal cofiring technologies, where up to 20 percent natural gas is burned in combination with coal, indicates that significant reductions in SO_2 and NO_x emissions can be achieved. Natural gas cofiring is one of the most promising and cost-effective near-term clean fuel technologies available to help utilities achieve our national clean air goals. Repowering boilers to burn natural gas, switching to natural gas on a seasonal basis, or installing gas-fired combustion turbines are also economically and environmentally sound compliance options.

Despite its positive environmental characteristics, the ability of natural gas to serve as a viable acid rain

reduction option will depend directly on how an acid rain program is structured. The industry's position is that any acid rain program should be based on the principle of flexibility, allowing utilities the broadest possible latitude to achieve the necessary emission reductions. A freedom of choice approach to acid rain control will encourage utilities to choose the most efficient compliance option, minimize costs, and allow all compliance alternatives to compete on an equal basis. The Administration's acid rain proposal best embodies this philosophy, and A.G.A. and INGAA have endorsed Title V of S. 1490.

The natural gas industry's interest centers on ensuring that acid rain legislation is flexible and does not discourage the use of natural gas as a compliance measure, either by requiring flue gas desulfurization units (scrubbers), or by subsidizing scrubber technology at the expense of other options.

ELEMENTS OF A FLEXIBLE COMPLIANCE PLAN

A flexible approach to the problem of acid rain should include the following elements:

- Utilities and state authorities making emission reduction decisions should be able to choose from the full range of SO₂ and NO_x reduction options. Legislation should not, for example, directly mandate the installation of scrubbers by utilities, or indirectly impose this option by requiring a very low

emissions rate by a limited number of plants. Rather, utilities should be allowed to spread their compliance burden over all their plants, thereby ensuring the availability of a least cost control option.

This is not the first time Congress has been asked to legislate utility decisionmaking. In 1978, with passage of the Powerplant and Industrial Fuel Use Act, Congress legislated coal as the appropriate fossil fuel for utility use, believing that natural gas was a rapidly diminishing resource. Of course, those predictions proved wrong, Congress subsequently repealed those prohibitions on natural gas usage, and today, natural gas is an extremely attractive option for electricity generation.

Given that experience, Congress should regard suggestions to mandate specific acid rain control technologies to the exclusion of alternatives with great skepticism.

- Legislation should allow for emission trading, giving states and utilities the ability to achieve reduction targets on a system-wide, state-wide or regional basis, rather than requiring each plant to meet a specific emission rate.

Most of the pending bills in Congress incorporate this element to some degree. Basic cofiring alone does not achieve as large a percentage of SO₂ reductions as does a scrubber or fuel switching, thus it will likely not be the method by which most large-scale SO₂ emission reductions are obtained. On the other hand, it can be a very attractive option for certain plants. An effective trading program

will encourage cofiring to be implemented where it does make economic sense and will allow those reductions to be counted toward the utility's or state's overall tonnage reduction requirement. In this way, trading will minimize the overall economic impact of the bill and improve the efficiency of the program.

- Legislation should allow emission reductions to be achieved on an annual basis rather than on a continuous or monthly basis.

Emission standards for new plants are set on a continuous basis, but there is no compelling reason to apply this standard to the reduction of emissions from older plants, where the objective is to achieve certain annual tonnage reductions. Annual averaging will facilitate trading arrangements and allow utilities the flexibility to use more natural gas in the summer months, when pipeline capacity is most readily available and when acid deposition peaks. Because of higher residential demand during the winter months, natural gas may not be available to utilities in certain parts of the country 365 days a year. A utility executive faced with a continuous or monthly SO_2 compliance requirement would understandably be hesitant to choose a natural gas option, even where it made economic and environmental sense.

- Legislation should allow NO_x -for- SO_2 trading.

This feature, unique to the Administration bill, is an

innovative idea that will further the goals of clean air and economic efficiency. Natural gas technologies are particularly effective in reducing emissions of NO_x , a requirement of all the bills introduced in Congress to one degree or another. An inter-pollutant trading feature will not only encourage NO_x reductions beyond those otherwise called for, but it also will create a mechanism whereby additional electrical generation can be accommodated without breaching the SO_2 tonnage cap in the bill.

COST SHARING

The natural gas industry opposes the cost sharing programs as set forth to date in some of the acid rain proposals introduced in the House. Our opposition rests on two principles: cost sharing programs would encourage utilities to install capital intensive technologies, and thus would discriminate against other control options; and most cost sharing proposals include a tax on natural gas-fired electricity to help fund the program, even though natural gas emits virtually no SO_2 . Certainly, our associations will continue to evaluate all the cost-sharing proposals that are advanced during consideration of the acid rain legislation in light of these principles.

Certain acid rain bills also contain additional subsidies for clean coal technologies, in some cases with

the money coming from the fee on electricity. The natural gas industry supports the current clean coal research and development program. Indeed, gas/coal cofiring research has benefited from the program, and it may be appropriate to give utilities pursuing clean coal technology an extension of the emission reduction deadline. Extensions should apply to all technologies under the clean coal program. This would include retrofit as well as repowering. However, this legislation should not become a vehicle for providing subsidies for commercial installation of clean coal technology in utilities. The result of such a program will be to subsidize the more expensive, rather than the more efficient, approaches to emission reductions.

The natural gas industry does not seek commercialization funds for its clean coal options, and we oppose providing such funds to other technologies. The current DOE Clean Coal Program is structured to demonstrate the commercial feasibility of the technology; therefore, no further funding support should be necessary.

THE USE OF NATURAL GAS AS A MEANS OF ACID RAIN EMISSION CONTROL

As mentioned above, natural gas technologies with coal can help reduce utility emissions of SO_2 and NO_x , the precursor of acid rain. Four technologies have been used to reduce emissions of the combustion of coal:

- basic cofiring -- where the supplemental firing of nominally 1 - 10 percent gas provides emission reductions and operational enhancements;
- gas reburn -- where 15 - 20 percent gas injection provides 50 - 60 percent NO_x reductions and operational benefits;
- gas reburn/sorbent injection (GR-SI) -- where the mating of these two technologies provides 50 percent SO_2 and 60 percent NO_x reductions; and
- gas substitution -- where gas is substituted for coal or high sulfur oil on a seasonal or year-round basis, virtually eliminating SO_2 and particulate emissions, while also significantly reducing NO_x emissions.

Further down the road are other gas and coal-using technologies that you will hear more of in months to come. This includes the NOXSO process which achieves simultaneous sulfur and nitrogen oxide reductions, and the SNOX process, which can simultaneously reduce both SO_x and NO_x by perhaps as much as 95 percent. These are all technologies that are well worth developing and that, could actually prove to be more effective than scrubbers. They should not be nipped in the bud by inflexible legislation.

Gas Cofiring

Basic cofiring of coal with natural gas involves the injection of gas into the boiler to provide a fraction of its total heat input. Originally, it was thought that this technique would reduce the amount of SO_2 emissions in the same proportion that gas was used in the boiler. However, a recent field evaluation with the Cheswick power station in

Pennsylvania found that even greater than proportional reductions of SO_2 occurred. That test, which involved a 570 MW tangentially-fired boiler, found that cofiring 1 percent - 3 percent gas could obtain SO_2 reductions of approximately 3 percent - 10 percent. Similarly, 6 percent to 12 percent gas cofiring could reduce NO_x emissions by 10 percent - 25 percent.

This test demonstrated that cofiring is also attractive because it yields many other positive operational and environmental benefits in addition to the SO_2 and NO_x emissions reductions. These benefits include a reduction of particulates, improvement of fly-ash quality, start-up improvement (if gas was not previously used), availability improvement, operation and maintenance cost reductions, peaking capacity increases, turn-down capability improvement, and boiler efficiency improvement.

Gas Reburn

Reburn technology is aimed primarily at reducing power plant NO_x emissions. It also involves using gas as a small portion of the boiler fuel, but unlike basic cofiring, reburn technology involves injecting that fuel into a zone beyond the primary combustion zone to create a natural gas rich "reburn" zone. Over-fire air is added in a final burnout zone to complete the overall combustion process. In this reburn zone, much of the NO_x present is converted to

elemental nitrogen.

Pilot tests indicate that a majority of cyclone boilers could successfully apply this technology in order to reduce their NO_x emissions by approximately 60 percent. This is particularly significant as no other commercially demonstrated NO_x reduction technique exists for these boilers. Although the majority of cyclone units are 20 - 30 years of age, utilities plan to operate many of these units for at least an additional 10 - 20 years. In addition, the majority of these units are in the Midwest, an area targeted for acid rain and ozone emissions control.

Gas reburn combined with dry sorbent injection (GR-SI) refers to combining reburn techniques with the injection of dry calcium-based sorbent in the over-fire air area of the boiler to reduce SO_2 emissions. Combining gas reburn with sorbent injection avoids the cost and complexity of other types of sorbent injection technology, improves sorbent utilization, reduces the amounts of sorbent required, and decreases the additional particulate burden on the plant's precipitator. Using a 15 percent to 20 percent proportion of natural gas in a GR-SI configuration is expected to achieve the NO_x reductions cited above and also reduce SO_2 emissions by 40 percent to 60 percent. Attachment A illustrates the GR-SI approach in which sorbent material is injected into the "burnout zone" to capture SO_2 released

from coal burned in the primary combustion zone.

GR-SI is considered applicable to all boiler designs, is more easily retrofitted than scrubber technology, and may offer some site specific operational enhancements. The best opportunities for applying GR-SI are projected to occur on medium to smaller size units (less than 500 MW), units with shorter remaining economic lives, and will probably be utilized at moderate to low capacity factor units. Such units would typically have been built in the 1950s and 1960s.

To date, basic cofiring has been tested at one commercially operational plant. Tests of all three cofiring technologies are scheduled to begin at six other power plants within the next year. Three of these projects are in Illinois and the others are located in Indiana, Oklahoma and Ohio. These projects are being funded from a variety of sources, including the natural gas industry and, in some cases, the Department of Energy. In all, a total of almost \$52 million will be invested in cofiring demonstration projects.

Economics of Cofiring

The economics of using a particular natural gas cofiring technology at any given utility facility depend on a variety of factors, including size, other technical options, age of the plant, capacity factors, the sulfur

content of the coal used, and the availability and cost of gas. A.G.A. and INGAA have examined the practicality of supplying gas for cofiring at 50 of the largest SO_2 emitting power plants. The variables included were distance to the utility hookup, costs and balance-of-system costs (additional pipeline system upgrade costs necessary to serve the new load). If the two most expensive plants to hookup are excluded, the average cost per mile was about \$310,000. Also, for 90 percent of the cases, the hookups could be constructed within nine months. Thus, not only is the cost of providing service minimal compared to scrubbers, it can be implemented in a relatively short time period. The copy of this report is attached.

The estimated capital costs of actually modifying the plant to accommodate cofiring range from \$2 to \$4/kw for basic cofiring, \$15-\$30/kw for gas reburn, and \$50-\$100/kw for reburn combined with sorbent injection.

An economic analysis performed by the Gas Research Institute examined the market potential for GR-SI technology as compared to scrubbing or fuel-switching for power plants. This analysis shows that the GR-SI option could result in additional gas consumption of 211 Bcf to 750 Bcf of additional gas demand annually in up to 250 individual boiler units. The analysis found that the expected price of gas to the utility was the most significant factor in

determining the choice between gas and other alternatives, and the range of volumes cited above reflect alternative price scenarios.

EMPLOYMENT IMPACTS

By generating additional demand for natural gas, cofiring would help stimulate additional employment opportunities in the gas production sector. At the same time, cofiring provides a means whereby plants can continue to use their current coal supplier when the plant would otherwise be forced to switch fuels or possibly even close.

An economic study done at Southern Methodist University assessed the impact of higher natural gas production in Texas on employment. The study found a potential gain of 22,614 new jobs (including support and associated services) in Texas from an increase of just 379 Bcf of natural gas production. Based on this relationship, the employment growth resulting from expanded gas demand of 200 Bcf to 750 Bcf would be 12,000 to 45,000 jobs.

While cofiring would help create jobs in the gas industry, it would be wrong to assume automatically that these gains come at the expense of existing coal mining jobs. In fact, in many instances, cofiring could actually help protect certain mining jobs that would otherwise be in jeopardy.

Faced with the need to reduce emissions from existing plants, a utility can choose to install a scrubber, switch to low sulfur coal or natural gas, or cofire. Undoubtedly, the scrubber option will preserve current coal industry employment patterns by allowing plants to continue using the current coal supplies. But for many plants, scrubbers may be impractical--scrubber economics will be less favorable for older and smaller plants. In other cases, plants may not have the physical space for a scrubber, or an operator may need to achieve NO_x reductions in addition to SO_2 reductions. In these instances, the choice is between fuel switching, plant output reductions, and cofiring. Given these alternatives, cofiring preserves jobs by allowing plants to remain in normal operation and use current coal supplies.

A significant number of plants could be in this situation. While it is difficult to determine with precision the thresholds beyond which scrubbing becomes impractical, there are 550 boiler units under 300 MW in size and over 30 years of age. These 550 plants burn 84 million tons of coal annually which, based on industry employment indices, would support the employment of 16,000 mine workers.

Thus the employment impacts of cofiring must be viewed in light of the alternatives facing the utility. In many

cases, cofiring may be the least disruptive and most economic option and may preserve jobs that otherwise would be lost.

NATURAL GAS SUPPLY OUTLOOK

There is a more than adequate gas supply to meet the needs of complying with acid rain legislation. As demand rises, the market for natural gas improves, creating an incentive for increased drilling and production. So long as the domestic market for the natural gas resource base remains free of price controls and other artificial market constraints, the resource base is large enough to meet substantially higher levels of gas demand. Together with supplemental sources of gas, such as Canadian or Mexican imports, the resource base is also large enough to overcome the results of occasional marketplace misjudgments. Historical shortages have been due to improper price signals rather than a true resource shortage.

Our industry does not stand alone in pointing to a large domestic natural gas resource base. This conclusion also has been reached in a landmark study on natural gas supplies by the U.S. Department of Energy (DOE) entitled, An Assessment of the Natural Gas Resource Base of the United States.

In this May, 1988 study, which drew upon the knowledge

of a number of expert panelists, DOE focused on conventional natural gas resources that are domestically available and can be recovered with today's technology. The study found that, in the lower 48 states alone, the proven reserves and currently undiscovered supplies total 1,059 trillion cubic feet (Tcf). At today's level of nationwide gas consumption, this amount is equivalent to a 62-year supply.

DOE further found that, of this 62-year supply of technologically recoverable gas, the equivalent of a 35-year supply is available at wellhead prices below \$3.00 per MMBtu. This wellhead price range is not too different from prices that occur at the peak of the winter heating season. DOE also found that this 35-year supply can rise to a 45-year supply if wellhead prices rise to a level of \$5.00 per MMBtu. This range is markedly above today's prevailing prices, but still within the historical experience of gas consumers in the early 1980s.

These supply figures do not include vast natural gas resources in Alaska (estimated by DOE at 129 Tcf), Canada and Mexico. Nor do they include possible supplies from unconventional domestic sources that may be accessible in the future. These resources are known but not technologically accessible under prevailing industry economics without federal research and development funds.

In short, DOE's estimates of gas ultimately available

to American consumers can be considered conservative. We add that DOE's resource base estimates are similar (when Alaska is included) to the most recent estimates made by the Potential Gas Committee (PGC), a body of independent experts from throughout the natural gas industry. According to the latest PGC study, in the United States, conventionally recoverable gas at year-end 1988 was 836 Tcf (this includes "proven" reserves, which are already known to exist). At current gas consumption rates of roughly 17 Tcf per year, the PGC estimate is equivalent to a 57.8 year supply.

We are aware that in August, the Department of Interior released its undiscovered resource assessment, which indicated a range of 307-507 Tcf of undiscovered natural gas. However, according to the author, this estimate does not consider the entire gas resource base. It omits large volumes of gas in tight formations, coal seams, and enhanced recovery. Therefore, it cannot be directly compared to the above estimates.

Again, we do not claim that natural gas is a panacea for the control of acid rain. We do optimistically expect natural gas to be responsible for achieving approximately one-fifth of the ten million ton reduction called for in most bills. The supply is more than adequate for gas to play a meaningful role in reducing acid rain deposition with minimum costs to the country. It also has the advantage of

being easy and quick to implement as a compliance strategy.

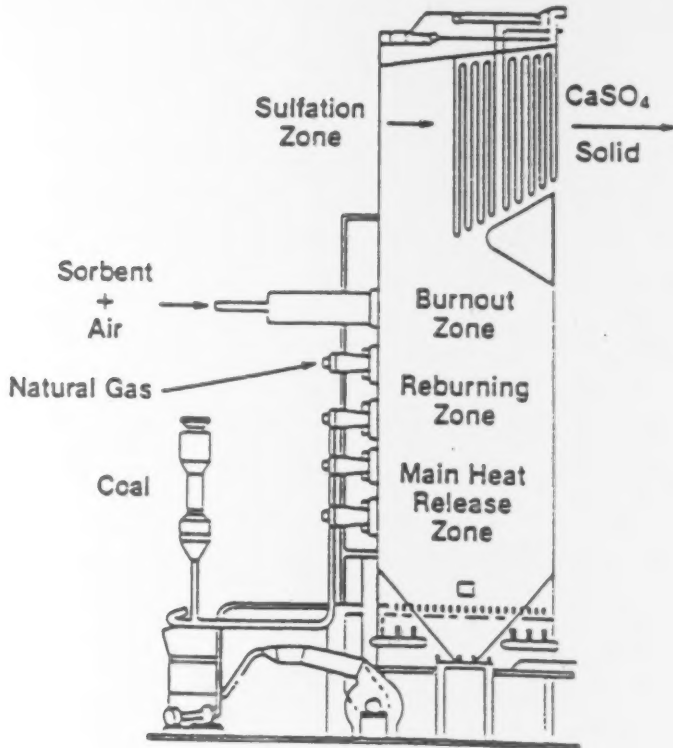
CONCLUSION

In summary, Title V of S.1490 best combines the elements A.G.A. and INGAA believe important in an acid rain program, and we support that legislation. The natural gas industry believes that a flexible approach to acid rain legislation will best serve both the electric and gas utilities, their suppliers, their customers and our national economy. By letting plant operators choose the most economical and site-specific control options for their particular plants, national environmental goals can be achieved in a least-cost manner.

Mr. Chairman, we had not seen legislative language of your acid rain proposal before we completed this written statement. We respectfully request the opportunity to prepare a response to your bill in a timely manner to be included in the record of this hearing.

Again, I appreciate this opportunity to appear before the Subcommittee and will respond to any questions you may have.

GAS REBURNING-SORBENT INJECTION



BACKGROUND REPORT

89-4
June 1989CO-FIRING OF NATURAL GAS IN ELECTRIC POWER PLANTS:
ARE PIPELINE HOOKUPS FEASIBLE?

EXECUTIVE SUMMARY

This report describes the methodology and results of a joint INGAA-AGA survey to determine the feasibility of providing natural gas services for co-firing at certain power plants. The survey covered interstate pipelines and local distribution companies operating in the vicinity of 50 of the largest power plants in terms of sulfur dioxide (SO_2) emissions. Co-firing of natural gas and coal has been proposed as an effective and economic strategy for lowering SO_2 and nitrogen oxides (NO_x) emissions from coal-fired boilers in power plants.

A total of 18 pipelines and nine local distribution companies responded to the survey, each providing data on one or more of the 50 plants. In some cases, as many as four companies provided information on serving one plant. The responses indicate that service to all 50 plants is possible. The average total cost per plant was \$6.4 million, but is influenced by a few costly cases. If the two most expensive plants to hookup are excluded, the average cost was \$4.1 million per plant. For the least expensive 48 plants to hookup, the average cost per mile was about \$310,000. About half the plants were 10 miles or less from a gas system, and only seven were more than 20 miles away from one. For ninety percent of the cases, the hookups can be constructed within nine months.

PREFACE

A Background Report is an INGAA document which presents the results of research into a particular technical area of interest to those who wish a deeper understanding of the interstate natural gas industry. Background Reports are not aimed at in-depth discussion of policy issues. Rather, they summarize research intended to help illuminate some of the consequences of public policy initiatives. The information contained in this report was requested of INGAA and the American Gas Association (AGA) by the Office of Fossil Energy of the U.S. Department of Energy as part of its evaluation of possible options for the administration's position on new Clean Air Act reauthorization legislation.

This report was prepared by INGAA and is based on information collected by INGAA and AGA through a survey of their respective members. Any questions or comments should be directed to Samir Salama of INGAA (202/626-3200).

METHODOLOGY

INGAA and AGA surveyed their members to determine the feasibility of providing gas services to a list of plants representing the nation's top 50 SO_2 -emitting power plants (see Appendix A). This list, which also includes plant location, size and utility affiliation, was prepared by DOE's Office of Fossil Energy based on 1985 data. The Office estimated peak day gas requirements for each plant based on co-firing at the maximum rate of 20 percent of the total heat input to each plant.⁵ The Office estimated total heat input to each plant conservatively from the plant's total nameplate capacity (in MW) by assuming 100 percent utilization (8,760 hours per year) and an industry average heat rate of 10,000 Btu/kWh. It was assumed that the maximum natural gas loads identified for each power plant would occur in the summer during the off-peak season for gas demand and that current natural gas deliverability at the wellhead would be sufficient to meet this incremental load.

The respondents were asked to identify plants that they could serve and, for each of these plants, provide the following information:

- Construction cost for the least cost route to the plant,⁶
- Distance of that route in miles of pipe,
- Balance-of-system costs⁷ to supply that one plant if necessary, and
- Nonmonetary factors that might delay construction.

The respondents were asked also to quantify additional balance-of-system costs if all plants found feasible were to be added to the pipeline or distributor system.

The hookup cost data from both pipelines and distributors were compiled into one database and classified by plant. Balance-of-system costs due to the addition of individual plants were included in these costs. For each plant, the least cost hookup was selected as an initial possibility. If a selected least cost hookup was from a pipeline or distributor with balance-of-system costs for multiple hookups, then the initial cost was revised to include a prorated share of those costs. The prorata share for each plant was calculated as the estimated balance-of-system costs divided by all plants included in those cost estimates.⁸ The selection of the least cost routes was then finalized by

⁵ To the extent that not all units within the 50 plants are coal-fired, this estimate of peak day requirement would be overstated.

⁶ For operational reasons, the delivery pressure for the plants was selected to be 50 psig (pounds per square inch gauge).

⁷ Costs incurred elsewhere on the system to provide this service, including possible upgrades of compressor stations, meters, valves, etc.

⁸ This proration is conservative because the balance-of-system costs might only be incurred if

repeating the selection process after taking into account the additional balance-of-system costs.

FINDINGS

Eighteen pipelines and nine distributors provided cost and distance data for one or more of the 50 power plants. In some cases, as many as five pipelines or distributors provided information on a hookup to one particular plant. Several survey respondents also indicated a willingness and ability to serve other, smaller electric power plants not on the top 50 list. The results discussed below represent data for the 50 plants only.

Distance

The mean distance between pipeline or distributor systems and the 50 plants is about 13 miles. A distribution of these distances is shown in Figure 1 and indicates that just under half of the 50 plants are within 10 miles of a pipeline or distributor. Seven of the 50 plants are more than 20 miles from a source of gas.

Hookup Costs

Construction costs to build a lateral hookup between a pipeline or distributor and the power plant ranged from \$100,000 to \$27 million. Figure 2 shows that 60 percent of the plants have construction costs which are \$4 million or less. Of the 50 plants, 90 percent have hookup costs less than \$8 million. The mean hookup cost is \$4.4 million. However, if the five plants with the highest construction costs were excluded, the mean cost would drop to \$3.1 million per plant.

Figure 1
Frequency of Plants
Based on Distance

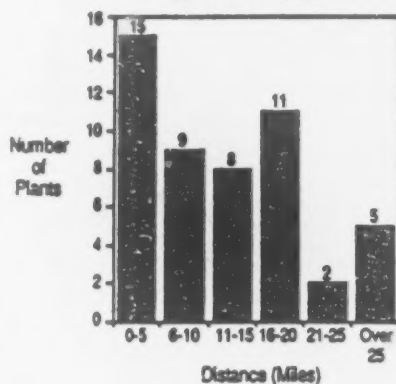
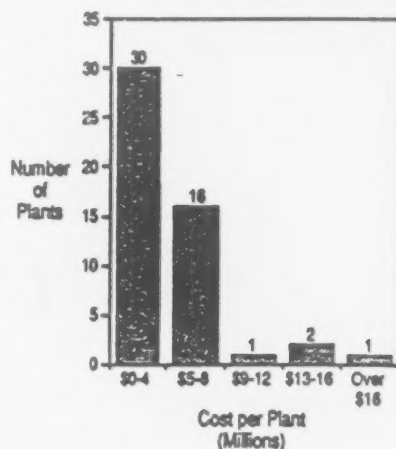


Figure 2
Frequency of Plants
Based on Hookup Cost



all multiple hookups were provided. For a subset of those hookups, the balance-of-system costs could be less.

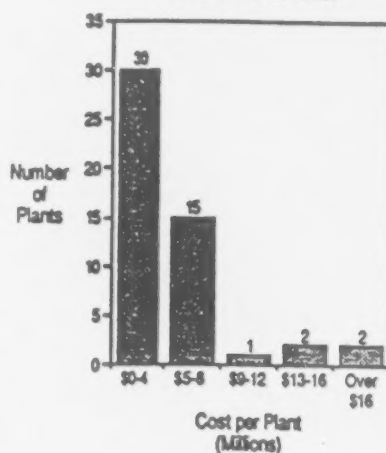
Balance-of-System Costs

Only 7 of the least cost routes to the 50 plants required additional system upgrade and resulted in balance-of-system costs. The balance-of-system costs were significant for two plants, which accounted for \$92 million of the total \$98 million in balance-of-system costs.

Total Costs

The total costs per plant include both the hookup and the balance-of-system costs. A distribution of the 50 plants based on total costs is shown in Figure 3. The mean total cost per plant for all plants is \$6.4 million and the median is \$3 million. Once again, the large costs of just a few plants skew the mean. If the two plants with costs over \$16 million are removed from the sample, the mean total cost per plant falls to \$4.1 million. On a cost per mile basis, the mean for the 50 plants is about \$500,000. When the two most expensive plants are excluded, the mean total cost per mile is around \$310,000.

Figure 3
Frequency of Plants
Based on Total Cost



Factors That May Delay Construction

Five plants had least cost hookup routes which involve factors that could delay construction. Three plants are located in densely populated areas which could delay the permitting process and hookups to two plants would require crossing a major river. These factors are likely to delay construction of hookups to only these five plants. The remaining 45 plants could be constructed in nine months or less.

CONCLUSIONS

Interstate natural gas pipeline companies and local distribution companies are capable of providing natural gas services to support co-firing at the nation's 50 highest SO_2 -emitting power plants. Construction of these hookups can be completed quickly (within 9 months for most plants) and at moderate capital costs relative to other options. Further research would be needed to assess the feasibility and costs of gas hookups to serve co-firing needs of the next tier of 50 to 60 coal-fired power plants.

APPENDIX A
TOP 50 SULFUR DIOXIDE EMITTING POWER PLANTS
 (Based on 1985 data)

Plant	Utility	State	County	Size (MW)	Gas Req'd. for 20% Co-firing (MMCF/D)
EC Gaston	Alabama Power Company	AL	Shelby	1880	90
Colbert	Tennessee Valley Authority	AL	Colbert	1350	85
Big Bend	Tampa Electric Company	FL	Hillsborough	1794	88
Crist	Gulf Power Company	FL	Escambia	1002	48
Warsley	Georgia Power Company	GA	Heard	1730	83
Hartlee Branch	Georgia Power Company	GA	Pulam	1540	74
Yates	Georgia Power Company	GA	Cobb	1250	60
Bowen	Georgia Power Company	GA	Barlow	3160	152
Coffeen	Central Illinois Public Service	IL	Montgomery	913	44
Kincaid	Commonwealth Edison Company	IL	Cristian	1182	57
Baldwin	Illinois Power Company	IL	Randolph	1892	91
Joppa	Electric Energy Inc.	IL	Massac	1098	53
Gibson	Public Service Indiana	IN	Gibson	3340	160
Clifty Creek	Indiana Kentucky Electric Corp.	IN	Jefferson	1303	83
Cayuga	Public Service Indiana	IN	Vermillion	1070	51
Paradise	Tennessee Valley Authority	KY	Muhlenberg	2558	123
Ghent	Kentucky Utilities Company	KY	Carroll	2044	98
Braton Point	New England Power Company	MA	Bristol	1600	77
Monroe (MI)	Detroit Edison Company	MI	Monroe	3152	151
Montrose	Kansas City Power & Light	MO	Henry	494	24
New Madrid	Associated Electric Coop.	MO	New Madrid	1200	58
Labadie	Union Electric Company	MO	Franklin	2482	119
Thomas Hill	Associated Electric Coop.	MO	Randolph	1213	58
Roxboro	Carolina Power & Light Company	NC	Person	2558	123
Kyger Creek	Ohio Valley Electric Corp.	OH	Gallia	1086	52
Eastlake	Cleveland Electric Illum. Co.	OH	Lake	1257	60
Cardinal	Cardinal Operating Company	OH	Jefferson	1880	90
WH Sammis	Ohio Edison Company	OH	Jefferson	2304	111
Gent. JM Gavin	Ohio Power Company	OH	Gallia	2600	125
JM Stuart	Dayton Power & Light Company	OH	Adams	2441	117
Miami Fort	Cincinnati Gas & Electric Co.	OH	Hamilton	1292	62
Muskingum River	Ohio Power Company	OH	Morgan	1530	73
Conesville	Columbus & So. Ohio Electric	OH	Coshocton	1941	93
Conemaugh	Pennsylvania Electric Co.	PA	Indiana	1872	90
Montour	Pennsylvania Power & Light	PA	Montour	1647	79
Brunner Island	Pennsylvania Power & Light	PA	York	1558	75
Keystone	Pennsylvania Electric Co.	PA	Armstrong	1872	90
Hatsfields Ferry	Western Pennsylvania Power Co.	PA	Greene	1728	83
Homer City	Pennsylvania Electric Company	PA	Indiana	1970	95
Gallatin	Tennessee Valley Authority	TN	Sumner	1255	60
Johnsonville	Tennessee Valley Authority	TN	Humphreys	1485	71
Cumberland	Tennessee Valley Authority	TN	Stewart	2600	125
Centralia	Pacific Power & Light Company	WA	Thurston	1330	64
Oak Creek (WI)	Wisconsin Electric Power Co.	WI	Milwaukee	1552	74
Kammer	Ohio Power Company	WV	Marshall	712	34
Harrison	Monongahela Power Company	WV	Harrison	2052	98
Mount Storm	Virginia Electric & Power Co.	WV	Grant	1662	80
Mitchell (WV)	Ohio Power Company	WV	Marshall	1632	78
Amos	Appalachian Power Company	WV	Putnam	2933	141
Fort Martin	Monongahela Power Company	WV	Monongahela	1152	55

SUPPLEMENTAL TESTIMONY OF
GEORGE A. DAVIDSON, JR.
CHAIRMAN AND CEO
CONSOLIDATED NATURAL GAS COMPANY
ON BEHALF OF THE
AMERICAN GAS ASSOCIATION
AND THE INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
FOR OCTOBER 4, 1989
HEARING ON
ACID RAIN PROPOSALS

October 18, 1989

Introduction

Mr. Chairman and Members of the Subcommittee:

These comments supplement the testimony filed on October 4, 1989 for the above-referenced hearing. Specifically, these comments reflect the gas industry's views on the Mitchell/Baucus acid rain proposal.

To the extent the proposal advocates a flexible, free-market approach to compliance options and has no tax or subsidy provisions, it is consistent with the principles embraced by the natural gas industry. However, we do have some concerns with certain provisions of the Mitchell/Baucus proposal.

NO_x Reductions

By requiring nitrogen oxides (NO_x) reductions of 2 million tons from 1980 levels, this proposal is more stringent than the President's bill that calls for a 2

million ton reduction from the emissions in the year 2000. This more stringent scheduling requirement illustrates the sponsors' commitment to clean air and the importance of NO_x reductions in an acid deposition control scheme. However, by not allowing NO_x for sulfur dioxide (SO_2) trading, the goals of clean air and economic efficiency would be hindered. As discussed in our main testimony, an inter-pollutant trading feature will not only encourage NO_x reductions beyond those otherwise called for, but it will also create a mechanism whereby additional electrical generation can be accommodated without breaching the SO_2 tonnage cap in the proposal.

Phase I Requirements

The Mitchell/Baucus proposal also differs from the Administration bill in that it establishes a lower emissions rate -- 1.1 lbs/MMBtu versus 2.5 lbs/MMBtu -- but targets much fewer plants. The effect of this is that Mitchell/Baucus would place restrictions on fewer utility systems and would target primarily the industrial Midwest. Utilities would be allowed to substitute the targeted plants or reassign their allowances, thereby giving flexibility to comply. However, considering all the plants located in high-sulfur coal country, non-coal technologies would not be considered as economically feasible control options.

The President's bill is more diverse geographically, calling for a less stringent standard but covering more plants. This geographic diversity will allow for all compliance options to carve out their niche in different areas of the country where the economics dictate. Therefore, S. 1490 has the greater potential to facilitate the use of natural gas technologies in reducing emissions.

Clean Coal Technology

The extension for plants repowering with a qualifying clean coal technology may be a necessary component to getting clean coal technologies on-line. However, we see no reason why repowering is limited to the few coal technologies mentioned in the definition. To allow current and emerging natural gas technologies to play their vital role in the clean air scheme, this definition should be expanded to include retrofitting with natural gas technologies, such as, but not limited to, cofiring, reburn, and reburn with sorbent injection. Some of these technologies were discussed in our main testimony and are in fact, included in DOE's current Clean Coal Technology Program.

Other Provisions

Other provisions in the Mitchell/Baucus proposal that are more stringent than the Administration bill include the specific NO_x emission limits for tangentially-fired and dry

bottom wall-fired boilers. As opposed to directing the EPA Administrator to establish standards, as in S. 1490, these specific NO_x limits will yield greater reductions more quickly. However, in Mitchell/Baucus, other types of boilers, including cyclone boilers, are permitted to emit NO_x at a rate as recorded for those units in 1995 and 1996. Since cofiring technologies can be a successful method of reducing NO_x from cyclone boilers, we recommend giving the Administrator flexibility to set an emissions rate based on what is technologically feasible.

The 1.0 lb./MMBtu cap on SO₂ emissions from oil-fired units will also help to attain greater reductions in a shorter timeframe.

The gas industry views the repeal of the percent reduction requirements and the "credit" for clean states as reasonable attempts to build a consensus in order to enact legislation as soon as possible.

Conclusion

A.G.A. urges your consideration of these supplemental comments during your Subcommittee deliberation on this important national issue. Again, the natural gas industry believes that a flexible approach to acid rain legislation will best serve both the electric and gas utilities, their suppliers, their customers and our national economy.

Testimony of
The National Rural Electric Cooperative Association
on
Proposals to Control Acid Rain and Related Issues

Before the
Senate Committee on Environment and Public Works
Subcommittee on Environmental Protection

Submitted by:

William Walbridge
Executive Vice President
Seminole Electric Cooperative

October 4, 1989

NRECA TESTIMONY

Mr. Chairman, on behalf of the National Rural Electric Cooperative Association (NRECA), I appreciate this opportunity to present testimony on proposals to amend the Clean Air Act. I am William Walbridge, Executive Vice President of Seminole Electric located in Tampa, Florida, and Chairman of NRECA's Executive Task Force established to identify and address issues of major interest or concern regarding clean air and acid rain control.

NRECA represents about 1,000 rural electric cooperative systems located in 46 states and in 2600 of the 3100 counties within the United States. Collectively, cooperatives generate about 8 percent of the nation's coal-fired electric generation and serve 25,000,000 rural electric consumers. Since the electric cooperatives have no shareholders and are nonprofit entities, NRECA primarily represents the interests of its members' electric consumers.

The NRECA membership has already invested heavily in pollution control under current Clean Air Act requirements. Largely as a result of these investments in clean air, about 40 percent of the cooperatives have electric rates at least 20 percent higher than their neighboring utilities. We support cost-effective amendments to the Clean Air Act. My testimony today focuses on certain principles for additional sulfur dioxide (SO₂) and nitrogen oxides (NO_x) controls from the nation's fossil-fueled electric generation facilities that the rural electric cooperatives feel are important. These principles are discussed in view of the Administration's bill, S. 1490, and the Mitchell-Baucus proposals, to the extent specific information on the latter has been made available in time for us to study and analyze its provisions.

o Electric Generation Taxes Should Not be Levied to Fund Pollution Control Costs of Selected Utilities

First, let me say that the Mitchell-Baucus proposal expressly recognizes utilities in states of which at least 50 percent of the coal-fired electric generation is equipped with expensive flue-gas desulfurization (FGD) units or scrubbers. This is a most innovative way of recognizing electric utilities for existing pollution control accomplishments.

Mr. Chairman, in the aggregate, the rural electric cooperative coal-fired generation is 44 percent scrubbed. My utility, Seminole Electric, is 100 percent scrubbed. I point this out, not because the rural electric cooperatives are seeking special recognition, but because we feel all electric utilities, whether cooperatively-owned or not, that have already paid a hefty price for pollution control should receive just credit for their investments.

Just credit takes many different forms. The Administration's bill, S. 1490, and the Mitchell-Baucus proposal, as we understand it, would not levy new taxes on the nation's electric utilities or their consumers to pay the pollution control costs of those utilities that have not yet paid a pollution control price. Imposing no new taxes on electrical generation is a major step in crediting clean utilities for existing, expensive sulfur dioxide (SO₂) control. We commend both Administration officials and Senators Mitchell and Baucus for advocating this most equitable approach.

o Additional Pollution Control Should be Cost-Effective

Both S. 1490 and the Mitchell-Baucus proposal, as we understand it, would impose additional pollution control requirements on almost all electric utilities. We know from past experience that these controls are expensive. We believe prudent public policy dictates that these additional controls must be based on cost-effective strategies. The less a new acid rain control program costs the nation's electric consumers, the better. Cost-effective national strategies must include: (1) individual utility "flexibility" to select the optimal method of SO₂ reduction, without incurring unnecessary expensive regulatory obstacles, such as mandatory technology requirements, (2) emissions averaging and emissions trading on an inter-utility and interstate bases, thereby avoiding costly source-by-source or unit-by-unit requirements, and (3) compliance deadlines that will provide maximum use of new, economic pollution control technologies.

The Mitchell-Baucus proposal and S. 1490 both go a long way toward allowing utilities the "flexibility" to use cost-effective SO₂ controls. The clean coal technologies provisions, however, should be expanded to include all new technologies - not just repowering categories - that have superior cost-effective advantages over existing methods of pollution control.

o Additional SO₂ and NO_x Control Requirements Should Not be Determined Arbitrarily, Such as Imposing Emissions Limitations on Existing Units Based Partly on Extremely Limited Historical Operation

Both proposals would establish SO₂ emissions tonnage limitations for older units based on 1985, '86 and '87 operating levels. In effect, a unit's annual operating level is frozen. Alternatively, if this operational level is abnormally low and it becomes necessary to operate the unit at a normal level, the unit must achieve difficult and costly additional SO₂ controls. We believe it is questionable and for some utilities quite unfair to establish expensive pollution control goals to be met for years to come, based on merely a few consecutive years of historical operation. Additional SO₂ requirements should be determined on a "level playing field" for the benefit of all utilities and all electric consumers involved. We suggest applying a standard capacity usage factor or using a broader

-3-

record of historical operation for determining a unit's emissions limitation goal.

Additionally, both proposals would limit units meeting new source performance standards (NSPS) to 1985 SO₂ emissions rates. In some cases these units cannot duplicate their 1985 track record from year-to-year. These NSPS units in the aggregate contribute less than 10 percent of all utility SO₂ emissions. To arbitrarily set new limits beyond NSPS would not only be unnecessarily expensive, but would penalize utilities that have already invested heavily in SO₂ pollution control. We see no need to impose additional SO₂ emissions rate goals on these expensive new units meeting NSPS standards.

Also, Phase I of the Mitchell-Baucus proposal would target units at selected plant sites to achieve a 1.1 lbs/mmBtu SO₂ standard by 1995. We believe it is inequitable and not cost effective to impose a limit on those units of 1.1 lbs, while the Phase II requirements for other units to be achieved five years later is 1.2 lbs.

o "Greenfield" Cap Lacks National Energy Policy and Electric Reliability Considerations

Both S. 1490 and the Mitchell-Baucus proposal, as we understand it, would prohibit the operation, on or after the year 2000, of new units built after legislative enactment unless SO₂ "allowances" are purchased from owners of old units. We understand an underlying major objective of the "greenfield" cap is to ensure that overall SO₂ reduction targets, once achieved, will not be ameliorated by growth of the SO₂ national emissions inventory because of new units yet to be built. We appreciate this concern, but we think it is overstated, particularly in view of a new generation of coal combustion technologies on the horizon, such as the combined cycle coal-gasification process capable of over 95 percent SO₂ removal or better.

We believe there are other overriding public policy considerations, such as providing adequate electric service. We believe the "Greenfield" cap is a questionable environmental policy and a potentially disastrous national energy policy.

The "greenfield" cap is questionable environmental policy because it would reward the nation's heavy polluters by granting them--totally free of charge--very valuable and likely invaluable SO₂ "allowances" or property rights. These property rights would be severely restricted, if not completely denied, to clean utilities. This legislative allocation would not only fail to give clean utilities credit for existing accomplishments, but would, in fact, penalize them.

-4-

Our second concern is whether the "greenfield" cap as proposed would present onerous national energy policy implications. The imperative underlying assumption required for the "allowance" system workability is that "free market" forces would not only prevent the hoarding of "allowances," but would encourage their sale. We question how this free market concept could operate in a market that is not free. State public utility commissions representing state and local interests could and would likely dictate alternatives for the regulated utility other than those following free market behavior.

Furthermore, what are the assurances, even in a free market, that utilities initially receiving these "allowances" will not "hoard" them? Why would a utility sell any "allowances" at present "market price" when the total number of "allowances" is forever constant, with their future value almost certain to increase, likely substantially so?

If the "allowance" market does not operate freely, as we suspect, what are the energy implications for a utility not having many or any "allowances"? What would be the energy alternatives available and at what price? As a utility executive can I provide my customers adequate electric power under a "Greenfield" cap? I seriously doubt it.

I strongly urge members of this Subcommittee and other members of Congress to examine these very important "greenfield" cap issues carefully. The proposal goes far beyond establishing environmental policy. It would create a major new energy policy as well. We all need to understand the potential implications this proposal would have on our national energy balance and reliability. Presently these implications are unknown.

I thank you, Mr. Chairman, for this opportunity to testify on this very important subject of clean air and acid rain. The rural electric cooperatives want to do as much as reasonably possible to assist in the national goal for cleaner air. I would be glad to answer any questions you or other members of the Subcommittee may have at this time.

Testimony of Mr. William Cornelius, Chairman
and Chief Executive Officer, Union Electric Company
before the
Senate Subcommittee on Environmental Protection
of the
Committee on Environment and Public Works
on behalf of
The Edison Electric Institute

October 4, 1989

Mr. Chairman and members of the Subcommittee, I appreciate the opportunity to appear before you today to testify on the issue of acid rain control legislation.

My name is William Cornelius, Chairman and Chief Executive Officer of the Union Electric Company, headquartered in St. Louis, Missouri. I am appearing today on behalf of the Edison Electric Institute (EEI), the national association of electric companies. EEI's members serve 96% of all customers served by the investor-owned segment of the industry. They generate approximately 78% of all electricity in the country and serve 74% of all ultimate customers in the nation.

Before I begin my comments on the issue of acid deposition, Mr. Chairman, I would like to make an observation which may not be popular but yet is an important consideration in this discussion.

Acid rain control legislation has been a contentious issue for at least a decade. More than 10 years ago a member of this Committee, Senator Daniel Patrick Moynihan, was the leader in the adoption of an amendment which led to the creation of a very important process -- an inter-agency, scientifically based undertaking to understand the causes and effects of acid deposition from all sources and the costs and benefits of various measures designed to reduce emissions from these sources. That process came to be known as the National Acid Precipitation Assessment Program (NAPAP).

Over the past decade, the American taxpayer has invested more than \$500 million to complete this undertaking.

This has been an honest, open and technically sound inquiry. Congress has been kept informed. Scientists have attempted to be helpful in answering an important public question. Since the study could be completed in the very near future and the preliminary results should be used to guide the legislative process, we believe it is not in the public interest to proceed without these results being made a part of these deliberations.

While NAPAP has been underway, many have been criticizing the utility industry for our actions in opposing acid rain control legislation during this past decade. While we have been strong in our opposition to additional acid rain control legislation, we have taken positive steps to reduce emissions. The electric utility industry's efforts since the Clean Air Act Amendments of 1970 and 1977 have been exemplary. U.S. industry's sulfur dioxide (SO₂) emissions have been reduced by over 8 million tons while increasing the use of coal as a utility boiler fuel. These reductions have been expensive to the U.S. consumer (\$43 billion per year according to the Commerce Department) but results have been realized.

Also of critical concern to this industry is the fundamental question of what impacts acid rain control legislation will have on our domestic energy strategy. While I realize that energy considerations fall within the jurisdiction of another committee,

I'm sure you recognize that whatever you do on the acid rain issue will have profound effects on this nation's energy future. Impacts on production of domestic coal -- our most abundant energy resource -- and its continued use as the major utility boiler fuel will have significant effects throughout the country, especially in the Midwest and Appalachia. If we are driven to diminish our reliance on coal, what fuel will take its place? We all recognize the perils of reliance on one specific fuel source. The utility industry supports a wide mix of fuels in supplying the country's energy needs. The acid rain control proposals now being considered create a bias away from the use of coal as a boiler fuel.

Our specific concerns focus on issues of cost, the use of emission caps and baselines, emissions trading, permitting and enforcement, clean coal technologies, NOx reductions, and conservation. We are also concerned about the apparent disregard for the need to design legislation based on the best scientific evidence that can be made available, so that the maximum emissions reductions based on the science can be achieved at the lowest possible cost to our customers.

These are only a few of the very troubling questions that must be examined in the scope of this Subcommittee's consideration of any acid rain control legislation.

I. COST

Let me discuss cost first. Cost is an issue of prime concern, since most of the costs to the utility industry eventually will be reflected in increased electricity bills to the residential, commercial, and industrial customers. The industry long has advocated the use of flexibility and freedom of choice to keep compliance costs to a minimum. But virtually all acid rain control proposals, including Title V of S. 1490, would be very costly. While some legislative proposals attempt to incorporate the principles of flexibility and freedom of choice into their overall emissions reductions strategy, most, including S. 1490, fail to accomplish that goal.

We estimate that the acid rain provisions of S. 1490 alone would cost electric utility ratepayers \$5.5 billion annually by the year 2000, then increase to more than \$7 billion per year. These estimates were developed in a study conducted by Temple, Barker & Sloane, Inc., based on a thorough analysis of the impact on various utility systems around the country. EPA analyses are largely consistent with these estimates.

We believe that flexible and realistic legislation could be devised that would achieve the national emission reduction goals at significantly lower costs.

Fifteen states clustered in the Eastern United States would bear the brunt of near term compliance costs, together paying 84 percent of the \$5 to \$7 billion price tag. Beyond the year 2000, however, as electric utilities across the country bring new coal-fired plants online to meet growing electricity demand, all states -- especially those in high-growth areas like the South and West -- would experience significant additional costs to meet offset requirements proposed in S. 1490 for new sources of coal-fired emissions. It is this provision which represents the greatest threat to using coal as an important part of our national energy strategy. We believe this issue must be reexamined. New sources are tightly controlled under existing law and should be excluded from such legislation.

We believe the costs cited above are unnecessarily high and, without compromising the emission reduction goals, these costs can be reduced. If utilities are given the flexibility to make their own decisions of how to meet the emission reduction requirements, we believe we could save electric consumers 20 to 30 percent of the costs. The bill as written is unnecessarily restrictive -- inviting major new regulatory programs to control utility operations. By tying our hands, the bill produces higher costs.

II. EMISSIONS CAPS FOR SULFUR DIOXIDE

A. RELIABILITY EFFECTS

Electricity and the power systems that produce and deliver it to the consumer are unique. Electric energy must be produced at the instant the customer requires it, and the electric power flow through the transmission network distributes automatically and instantaneously among the network elements based on their inherent characteristics. Due to the nature of electricity, the operation of the electric generation and the transmission system is automatic, instantaneous and complex.

Society and the nation's economy have come to depend on electricity being available when and where it is needed. Recognizing this dependence, electric utilities have responded by developing and operating highly reliable power systems. Electric power system reliability is a result of the performance of the individual system elements operating in concert. Reliability must be designed into the system when it is planned and constructed, and then operating procedures must be devised to assure that reliability is maintained in daily operation.

The uncertainties associated with the planning and operation of the power system would increase with an emissions cap on each generating unit. To sustain current system reliability levels, utilities would, of necessity, become more conservative. Over-control of emissions to ensure system reliability would tend

to raise costs. Furthermore, due to the complex nature of the proposed permit and trading sections, the reliable operation and control of the overall interconnected network would be more complicated because of the potential involvement of numerous parties, each of which might have different objectives than the utilities.

Annual emissions caps will inhibit the ability of interconnected systems to function reliably. Sources will be forced to preserve emissions allowances on a unit-specific basis, thereby making instantaneous generation captive to the emissions cap. Utilities will be forced more and more to depend on their own capability and less and less on coordination agreements with other companies. Regardless of the type of coordination arrangement, their purpose is to allow utilities to rely on one another, with the end result being improved reliability at lower customer cost. Caps produce exactly the opposite result.

B. REQUIREMENTS

One major concern to the industry in S. 1490's acid rain title relates to the emissions caps which were written into the bill between publication of the President's Fact Sheet in June and introduction of the legislation. The President stated that all plants above a certain size should "meet the same emission standard," which would be set at about 1.2 lbs. SO₂/mmBTU in the second phase, to reduce annual emissions by "approximately ten million tons from 1980 emission levels."

The utility industry's analysis of S. 1490 shows that the bill, combined with emission reductions already achieved since 1980, would result in an SO₂ emission reduction of greater than 12 million tons. Furthermore, our data indicate that the President's goal of 10 million tons can be achieved without the caps in S. 1490.

The bill, however, ignores these data and instead goes well beyond the goals specified in the President's June 12 Fact Sheet. The bill:

(a) specifically caps emissions from units operating with emission rates greater than 1.2 lbs/mmBTU at 1985-87 average generating levels, deliberately ignoring the "same emission standard" principle; this will require utilities with low base-period generation to operate their systems substantially below the target set by the President and below other sources that have higher base-period emissions;

(b) freezes the emission rate of units that operated at less than 1.2 lbs./mmBTU at 1985 actual emission rates, which unfairly penalizes units that were emitting at very low rates in 1985; and

(c) prevents construction of additional capacity unless new units have zero emissions or obtain offsets from other sources, ignoring the fact that such units already are stringently controlled under current law.

C. BASELINES

Another major concern is the "baseline" established in the bill for computing allowable emissions. Specifying the baseline as the average heat input in fuel during calendar years 1985, 1986, and 1987 introduces major inequities and regional disparities among sources and groups of sources, due to complex operating factors on different systems. To provide flexibility and equity, each utility should be given, at a minimum, the opportunity, based on operating history and long-range plans, to set baselines for its units as 1980, 1985, or an average of any consecutive three-year period during 1980 through 1987.

The facts that establishing any baseline year creates major inequities, substantially increases compliance costs, and is unnecessary to achieve the emission reduction goals are very persuasive reasons for deleting caps.

D. NEW SOURCES

The requirement that emission offsets be obtained for any new unit brought into operation after the date of enactment is unnecessarily restrictive and should be deleted from S. 1490. The provision creates disincentives for a market-based trading system, is extremely punitive to companies which mainly operate very low-emission sources, and is targeted at a class of sources that will have only minor contributions to total emissions. Elaborating

on those points: (a) if owners of existing sources anticipate growth on their systems, they will be very reluctant to trade away their allowances, and state regulatory agencies may prevent out-of-state trades if the loss of allowances would limit future economic growth; (b) for a utility system with units emitting below 1.2 lbs/mmBTU, allowances would not be allocated to such units, and the utilities will not have sufficient allowances on their own systems to offset new sources (this situation is particularly severe in the West, which would require that allowances be shifted from the East to the West but, for the reasons given above, such shifts very likely will be restricted, as would growth, for large portions of the country); and (c) significant growth in emissions from new units apparently was presumed by the drafters of S. 1490, but such units are subject to stringent New Source Performance Standards and the use of Best Available Control Technology requirements, and should not be included in such legislation.

III. EMISSIONS TRADING

Although the principle of market-based approaches is a good one, S. 1490 creates regulatory barriers that will preclude the full benefits of a trading program. Little trading would occur for several reasons: (a) bureaucratic procedures require that all trades be bilateral, include the signatures of both source owners, with approval of the state (or both states, if trading is interstate), and allow six months for federal approval; (b) the permit program and compliance plan requirements freeze both

operating and emission rates, making free trading impossible; (c) very limited time would be allowed to identify and negotiate trades before filing permit and compliance plan applications; (d) the 100 percent offset requirement for new sources would tend to force sources to hold excess allowances for future use, rather than making them available in the market place; (e) leasing of allowances, a potential for the majority of trades, is not specifically authorized in the bill, thereby placing such transactions in jeopardy; and (f) the bill does not direct that uniform trading rules be established at the federal level.

IV. PERMIT REQUIREMENTS

The permit provisions in S. 1490 virtually would allow the Environmental Protection Agency to usurp the traditional authority of states to issue permits under state implementation plans (SIP). States would have to establish permit programs that meet EPA approval, send proposed permits to EPA for review and approval, and revise permits to satisfy any EPA objections. If a state failed to submit permits which meet EPA approval, EPA could, at its discretion and at its own pace, issue or deny a permit. The real permitting power would reside with EPA, not the states. This sharp departure from existing law, allowing EPA to micro-manage permitting decisions, would make the states mere adjuncts to EPA. Under the present law, the SIP process, with federal oversight, has proved adequate to effectuate congressional intent. S. 1490 would impose severe restrictions on sources' ability to engage in

emission trading because of cumbersome and time-consuming constraints, would require excessive permit fees that must be paid by applicants annually, and would impose strong sanctions if a State does not accept the entire permit program.

V. ENFORCEMENT PROVISIONS

Title VI of S. 1490 would make major changes in the enforcement provisions of the current Clean Air Act, even though existing law gives the government broad and effective civil and criminal enforcement and prosecution powers. It would limit the opportunity for a full and fair hearing in civil and criminal cases; the proposal departs from basic principals of procedural fairness and equity.

For example, S. 1490 would: (a) eliminate "home-court" jurisdiction in enforcement actions by requiring all cases to come before the Federal Court for the District of Columbia, a provision that would give the federal government an unfair advantage against any defendant; (b) authorize a field citation program that in effect by-passes due process procedures; (c) insulate EPA enforcement orders and actions from judicial review; (d) insulate EPA nonattainment designations from judicial review and public notice-and-comment procedures; (e) give EPA virtually unlimited emergency powers, by eliminating the provision in the current Act which requires judicial action to extend emergency actions beyond a 24-hour period; (f) allow sources to be sued in successive citizen suits and EPA enforcement actions for the same

alleged violation; (g) delete the 30-day notice-of-violation provision in current law, a provision that provides incentives for sources to correct any infractions and prevents EPA from bringing enforcement actions for violations that may have been corrected earlier; and (h) subject negligent releases of certain substances to criminal penalties, a provision that is unprecedented in the Clean Air Act and that is inconsistent with fundamental principles of criminal law.

VI. CLEAN COAL TECHNOLOGIES

Our country's dependence on coal for energy, economic, and national security reasons will be served best by the continued development of clean coal technologies which offer substantial environmental, economic, and efficiency advantages over conventional technologies. Acid rain legislation which prohibits or delays the development of clean coal technologies could seriously undermine the substantial progress which has been made toward the commercialization of these technologies.

Clean coal technologies are projected to attain required environmental controls at lower capital, operating, and maintenance costs than current technology. Some offer simultaneous reduction of both SO₂ and NO_x emissions (scrubbers reduce only SO₂ emissions). Many will increase efficiency in coal use and therefore contribute to moderating emissions of greenhouse gases, including carbon dioxide, not only in the U.S., but worldwide. They can use a wide

range of coals, thus helping to preserve jobs in our coal fields. And, they can help to expand the export of U.S. coal and technology.

The U.S. government and private industry are engaged in a successful, cost-shared partnership to accelerate the development of emerging technologies that will use all types and ranks of coal more efficiently and cost-effectively. More than \$1.5 billion has been appropriated for the clean coal technology program. Two solicitations have been completed; 29 clean coal projects, totaling more than \$2.5 billion in estimated project costs, have been selected; and industry is committing, on average, three dollars for every two dollars provided by the federal government. A third solicitation has just been completed, with 47 new clean coal project proposals (valued at over \$3.9 billion) having been submitted to the Department of Energy on August 29. Furthermore, the Bush Administration's request for an additional \$1.2 billion to conduct two additional clean coal technology solicitations is pending in Congress.

If the ongoing clean coal technology demonstration program is successfully completed, a variety of clean coal technologies should be available for commercial order by the mid-to-late 1990s. Additional time after that will be required to incorporate these technologies into the systems of various utilities -- time to evaluate a technology's performance, to site projects, to complete permitting and regulatory approvals, and to place orders and

receive equipment from the clean coal technology manufacturers. Consequently, if compliance dates for any mandated emission reduction requirements are set too early, it is likely that utilities will opt for switching fuel sources, shutting down powerplants prematurely, or retrofitting with conventional scrubbers. Emerging clean coal technologies would then be a very limited option.

In this regard, it is necessary to understand that the important date is not only the date by which emissions reductions must be achieved, but also the date by which a decision must be made about the means to achieve compliance and by which compliance plans must be filed.

For example, it can require as much as four to six years to license, permit, contract for, construct, and place into service a currently available scrubber. A decision to use a clean coal technology would have to be made at the same time a decision otherwise would have been made to use a scrubber. This means that in order to comply with a year 2000 deadline, for example, utilities must make decisions about the methods for compliance between 1994 and 1996, depending upon individual utility circumstances and scrubber manufacturer backlogs. As explained earlier, it would be difficult to surmount the technical, financial, and other risks associated with commercializing certain clean coal technologies in such a timeframe. At a minimum, a longer period of time, such as an extension to 2005, would be more

realistic if clean coal technologies are to have a substantial role in any acid rain program.

Looking specifically at S. 1490, the opportunities to utilize fully the clean coal technologies currently under development are severely limited. Compliance plans for Phase I must be submitted by mid-1992, long before most technologies will be available for widespread commercial use. Even for Phase II, compliance plans are due by January 1995, which still is too early to be sure about the full-scale success and cost of most clean coal technologies. Further, only five listed repowering technologies qualify for the three-year extension in Phase II; various other very promising technologies, for which significant public and private expenditures are being made, do not qualify. As a result, utilities could lose a significant degree of flexibility to choose the most cost-effective methods of achieving emission reductions.

Congress has long recognized the tremendous potential of clean coal technologies and has supported their development. As debate on clean air legislation progresses, we encourage you to take great care that this potential is not jeopardized.

VII. NOx REDUCTIONS

The electric utility industry also is concerned with language in S. 1490 regarding reductions in the oxides of nitrogen, or NOx. One of the goals of the bill's Title V is to reduce NOx emissions

by 2 million tons below 1989 projected levels for the year 2000. While the specific details of the reduction program are left to the Administrator, the use of low-NOx burner technology is specified as the basis of the program.

Our concerns are two-fold. First, it is unclear from the bill's language whether or not a cap on NOx emissions is envisioned. The ambiguity of the language must be clarified in the legislation and not left to the discretion of the Administrator. As stated above, the utility industry strongly opposes the use of caps. Furthermore, because emissions reductions obtained by using low-NOx burners can be difficult to quantify and depend on the size and operation of each boiler, the utility industry believes that the NOx reduction requirements of the bill should stipulate a technology-based standard that is known to be achievable over a number of operating units.

Second, the utility industry is pleased that the Administration has specified the use of low-NOx burners as the basis for its NOx control strategy. However, it must be pointed out that low-NOx burner technology cannot be retrofitted on certain types of boilers. The only remaining technological option for those boiler types, selective catalytic reduction (SCR) technology -- which is extremely expensive -- has not been demonstrated as effective in controlling NOx emissions when burning high-sulfur coal, and it may result in the formation of a hazardous waste. Due to the lack of an acceptable control technology, the utility

industry believes that additional NOx controls on cyclone and roof-fired boilers should not be required by either the bill or the Administrator.

VIII. ENERGY EFFICIENCY AND CONSERVATION CREDITS

One of the most important issues that S. 1490 fails to address is the potential for reducing emissions of air pollutants through increased energy efficiency and use of conservation. The electric utility industry has made great progress in advancing conservation over the past years, and we believe it is short-sighted public policy to ignore the potential reductions in air emissions that can result from energy efficiency and conservation. Any "least-cost" approach to emissions control that does not address this potential is flawed.

The utility industry believes that the use of emissions credits or allowances should be specifically included in any acid rain control legislation. These credits would accrue to the operators of sources that have active conservation programs in place and available to their customers. We feel that a one-ton emissions credit should accrue to any source for each \$1000 invested in an energy efficiency or conservation program. In addition, trading of conservation credits between and among sources should be permitted.

IX. BAUCUS/MITCHELL PROPOSAL

On September 22, Senators Baucus and Mitchell announced the elements of a different acid rain control proposal. While we have not had the opportunity to analyze the legislative language in detail, we would like to share some preliminary thoughts on this proposal.

The Baucus-Mitchell proposal borrows many provisions from the President's bill, including a 10-million-ton SO₂ reduction by the year 2000, a two phased approach, a three-year extension for clean coal technology repowering projects, baseline years of 1985-87, emission caps, and creation of marketable permits. The views set forth on these issues earlier in my statement hold true for the Baucus-Mitchell proposal.

Further, the proposal revives the approach of naming the 20 largest SO₂ emitters, which would be required to reduce emissions to 1.1 lbs./mmBTU by January 1, 1995 (6 in Ohio; 2 each in Indiana, Illinois, Missouri, West Virginia, Georgia, and Pennsylvania; and 1 each in Tennessee and Alabama). Curiously, other plants would be allowed to emit at a higher rate -- 1.2 lb./mmBTU. Such a listing of plants restricts flexibility and is not consistent with the utility industry's position of least-cost emissions controls.

The proposal would repeal the "percentage reduction" requirement in the New Source Performance Standards (NSPS) so long

as the cap remains in effect and would exempt states with more than one-half of their coal-fired capacity utilizing scrubbers from further reduction requirements, except for the post-2000 cap on new sources. It appears, therefore, that these concessions really are illusory since new sources would be subjected to the offset provision. Also, the NSPS standard would be changed from pounds-per-million BTU to pounds-per-kilowatthour, ostensibly to reduce global warming. These issues need detailed study to assess their impact on utility operations and customer rates.

X. HAZARDOUS AIR POLLUTANTS

Mr. Chairman, while my testimony today has principally focused on the acid rain control provisions of amendments to the Clean Air Act, I also want to let you know of our concern that some of the pending proposals related to hazardous air pollutants also might result in significant, and we believe unnecessary, adverse impacts on the ability of this nation's electric utility industry to continue providing reliable service to our customers at reasonable prices.

This past March, EPA, pursuant to section 112 of the Clean Air Act, published for comment proposed regulations setting forth various approaches to the regulations of air-borne radionuclides from the uranium fuel cycle. We vigorously protested the approaches set forth by EPA and submitted literally hundreds of pages of detailed comments. Our concerns ranged from the agency's

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approach to risk assessment to its seeming lack of recognition of existing regulations that apply to our industry and which have a proven track record of maintaining such emissions to levels well below those internationally recognized as being safe.

As we have started to review the various legislative proposals that would amend section 112, we find that some of them would adopt the same flawed approach to risk assessment and standard setting. Others, while taking what we believe to be the more prudent course of further studying the radionuclide emission issue as it relates to utility boilers, still would leave the agency free to impose standards on miniscule radon emissions from coal piles that feed those boilers. We would like to alert you to this potential problem today and, at your request, would provide you with more detailed comments for the record in the near future.

I would be happy to answer any questions you or members of the Subcommittee may have at this time, and I could supply for the record additional information on the above points if you desire. Thank you.

STATEMENT OF
THE WESTERN REGIONAL COUNCIL
TO THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OF THE SENATE COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, D.C.
OCTOBER 4, 1989

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting the Western Regional Council to present testimony at this hearing. Joe Cannon, Chairman of the WRC Clean Air ad hoc Committee, is out of the country and has asked me to represent the Council today.

As many of you know, the Western Regional Council comprises 50 companies in the 18 Western United States. Among its members is a cross-section of most of the major industry sectors in the West, including financial, mining, utility, transportation, forest product, energy, engineering and other enterprises. Our comments today reflect a broad view of clean air and acid rain issues in our region.

I would like to focus my brief comments today on the "Mitchell-Baucus Acid Rain Proposal." Since the bill was not available to us to prepare this testimony, these comments are based on the two-page summary released last week. I ask your permission to submit a detailed written statement for the record after we have the opportunity to review the specific legislation.

Today I want to commend you for several specific positions and raise concerns about several others in your proposal.

First, the WRC firmly believes in the "polluter pay" principle and opposes cost-sharing or a nationwide tax on electrical generation. In the West, during the last 15 years non-ferrous smelters have spent more than \$2 billion on air quality controls. On power plants, controls were imposed even though low sulfur fuels were used. So in the West, we already pay for emission controls. It would simply not be fair to ask our region to pay again by subsidizing controls in other parts of the country. We strongly ask you to continue to support the polluter pay principle in acid rain legislation.

Second, we strongly support the principle of flexibility and "freedom of choice," allowing sources to choose the most cost-effective methods available to achieve emission goals. Phase 2 of the Mitchell-Baucus proposal, as we understand it, provides such freedom of choice to meet the 1.2 lbs./mmBtu SO₂ emission rate. We are concerned, however, that the 1.1 rate in Phase 1 of your proposal, in effect, mandates scrubbing of the 20 largest SO₂ emitters.

Third, since its enactment, WRC had advocated repeal of percentage reduction, the requirement that all new fossil fuel fired stationary sources achieve a percentage reduction in emissions. Fossil fuel fired stationary sources, like other

sources, should be required to meet emission limitations in the most economical manner. We applaud your attempt to repeal this provision which openly discriminates against our region and penalizes western low sulfur coal.

I should note, however, that because of the proposed imposition of SO₂ emission caps, as well as NSPS, BACT, and PSD requirements, we are uncertain about the actual benefits we may receive from repeal of percentage reduction.

Fourth, we appreciate the acknowledgement in the proposal that clean states should receive a credit. Until we see the actual legislative language, however, we are uncertain that your clean state credit provision provides any meaningful benefit to those many sources in our region that have already paid the price to become much cleaner than even the standards of the Mitchell-Baucus proposal. The concept is good, but probably needs to be expanded.

Fifth, the post-2000 cap on emissions in both the Mitchell-Baucus proposal and the Administration legislation places a severe penalty on those plants that have cleaned up prior to enactment of the legislation. The cap must be modified to permit construction of new, clean sources in the West and elsewhere, or else growth will be stifled after the year 2000. The WRC advocates treating the clean plants in the West at least as favorably as plants which currently exceed the 1.2 standard by

granting allowances to existing units for the amount by which they emit below 1.2 lbs./mBtu on the day of enactment. For many reasons, which will be detailed in our written statement, we do not believe it will be feasible for western utilities or other sources to purchase allowances from plants in the east.

Sixth, the WRC is very concerned about the proposed increase in NOx reduction from 2 million to 4 million tons by the year 2000. If this amount could be achieved by use of low NOx burner technology, it might be reasonable. However, we fear it anticipates expensive SCR technology which is neither cost-effective nor reasonable.

In conclusion, we note that acid rain simply has not been demonstrated to be a problem in the West, in great part because we have already paid, and are continuing to pay, the price to reduce emissions. Except for one or two states, Western states are meeting the 1.2 lbs./mBtu standard promulgated in the bill.

We appreciate the opportunity to appear before you today and look forward to continuing to work with you and your staff on these important issues.

STATEMENT IN OPPOSITION TO PROPOSALS TO INCLUDE A NEW FEDERAL TAX
ON ELECTRIC CUSTOMERS IN ACID RAIN LEGISLATION

For
The Subcommittee On Environmental Protection
of
The Committee on Environment and Public Works
of
The United State Senate

by
Nicholas P. Koskores
President
The New England Council

Washington, D. C.

October 4, 1989

STATEMENT BY NICHOLAS P. KOSKORES, PRESIDENT OF THE NEW ENGLAND COUNCIL,
BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION, COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS, U.S. SENATE
October 4, 1989

Mr. Chairman and Members of the Subcommittee:

My name is Nicholas P. Koskores, and I am President of The New England Council, the nation's oldest regional business group.

I am here today representing over 1,500 New England educators and businessmen, large and small, and from every area of economic activity: from basic manufacturing, to financial services, and cutting edge technologies.

Unique among business groups, The Council, since its founding in 1925, has established a tradition of developing constructive working relationships to promote the New England economy with legislators and policy makers at the state and federal level. The Council has cofounded a number of joint, public-private ventures, including the New England Governors' Conference in 1937, and the New England Congressional delegation in 1972. This year we assisted in the formation of the New England Energy Caucus.

On behalf of The Council, I am pleased to have this opportunity to share with you our views on measures designed to reduce precursors of acid rain that you are considering as amendments to the Clean Air Act.

A number of "acid rain" bills are pending before the U.S. Senate and House of Representatives, including a bill proposed by the Administration and introduced by members of this Subcommittee. All bills have provisions designed to reduce sharply the emission of sulfur dioxide (SO₂), principally from electric power plants.

A. Summary of Statement.

In brief, I will make four points in this statement:

1. We oppose a new tax on electricity generation and imports. The most important point is that we strongly oppose proposals in several bills before the Congress that would impose a new Federal tax on electricity to raise revenue that would be used to provide cleanup subsidies to electric utilities that now use low cost, high sulfur coal and that have lagged behind the rest of the nation in reducing sulfur dioxide (SO₂) emissions.

The proposed tax would, of course, be paid by electricity users as a part of their monthly electric bill.

For reasons detailed below, we believe that:

- . The proposed tax would be grossly unfair to consumers in the 6 New England states, and in some 30 other states that have low SO2 emissions.
- . Faulty claims of "unfair burden" are being made on behalf of the high SO2 emitting regions that would, under pending bills, be required to make significant SO2 emission reductions.
- 2. We endorse proposals to allow using the most cost-effective emission reduction strategies. The second point is that we strongly endorse provisions in the President's proposal (S. 1490) which permit utilities to select the most cost-effective means for reducing emissions. We endorse the concepts of "bubbling" and trading of emission allowances. We believe that maximizing flexibility in meeting emission reduction requirements will minimize the cost.
- 3. We recommend adding incentives to encourage conservation. The third point is that we urge the Congress to include incentives for energy conservation in acid rain legislation. Energy conservation measures are an effective way of reducing adverse environmental effects associated with the nation's steadily increasing demands for energy.
- 4. We urge avoiding conflicts with the Free Trade Agreement. The final point is that we urge the Congress to avoid actions which would conflict with the recently adopted U.S.-Canada Free Trade Agreement. Several of the pending proposals for a tax on electricity generation and imports would be inconsistent with the provisions of the Free Trade Agreement.

At this point, I would like to reiterate and supply details supporting the above summary points.

- B. We strongly oppose proposals to impose a tax on electricity generation and imports to raise revenues to provide subsidies to utilities that must reduce SO2 emissions, because a tax would be unfair to consumers who have already paid to achieve low emissions.

Proposals to tax electricity generation and imports would be very unfair for several reasons explained below.

- 1. The six states of the New England region have been leaders in requiring reductions of SO2 emissions, and recently enacted laws require further reductions.

For example, in 1985, the total SO2 emissions from all sources in the 6 states accounted for less than 2.6% of the nation's SO2 emissions.

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Recently, Massachusetts and New Hampshire enacted laws which require even further reductions in SO₂. As a result, all 6 states in the region will be meeting SO₂ emission reduction requirements by 1995 that are generally equal to requirements proposed for the year 2000 in bills pending before your Committee.

2. Consumers in New England and in other areas served by utilities that have reduced SO₂ emissions have already paid and will continue to pay billions of dollars to achieve low emissions. They should not have to pay others' costs of reducing emissions.

- a. Electricity consumers in New England have already paid hundreds of millions of dollars through their monthly electric bills to achieve low SO₂ emissions since cleanup efforts were begun in the 1960's. These costs were incurred as electric utilities switched to high cost, low sulfur fuels and installed pollution control equipment.

The table attached to this statement compares average fossil fuel costs in 1987 for ten high SO₂ emission states with costs for ten states that have low SO₂ emissions. This table underscores the fact utility customers in low SO₂ emission states are already paying high costs to achieve low emissions.

- b. Further, as indicated earlier, consumers in New England will be paying even more to achieve low emissions as recently enacted state laws require additional emission reductions in the early 1990's.
- c. Consumers in New England will be paying still more as the legislation you are now considering begins to take effect and electric utilities in areas with high emissions increase their use of lower sulfur fuels -- such as those used in New England -- thereby pushing up the market price for those fuels.
- d. We believe consumers in New England should not have to pay a fourth time through a new Federal tax on electricity that would be used to subsidize utilities in other regions that are using low cost, high sulfur coal as they undertake clean up efforts.

The people of our region are not alone in having low SO₂ emissions and having already paid large amounts to reduce SO₂ emissions. Similar claims can be made by most states West of the Mississippi River; by the states of Minnesota, Wisconsin, Michigan, and New York; and by most states along the East and Gulf Coasts.

3. The remaining problems of high SO₂ emissions are largely confined to certain utilities in 10 states where high sulfur coal is still widely used.

According to data issued by the National Acid Precipitation Assessment Program (NAPAP), SO₂ emissions totalled 23 million tons in 1985, with 15.5 million tons or 67% of those emissions from coal-fired powerplants.

The National Coal Association (NCA) has done extensive analysis of emissions from coal-fired powerplants (50 MW or more in capacity). According to NCA data for 1987:

- . The 10 states with highest SO₂ emissions* accounted for 10.4 million tons, or 70%, of all U.S. SO₂ emissions from coal-fired plants.
- . These same 10 states accounted for only 42.5% of the coal used by U.S. coal-fired power plants -- underscoring the SO₂ emission results of their high usage of low cost, high sulfur coal. (All 10 states still allow use of coal containing at least 3.5% sulfur.)

Clearly, some states and utility systems moved aggressively -- some starting in the 1960's -- to reduce SO₂ emissions, while others did not. Electricity consumers in areas with low emissions should not now be penalized by having to pay a new Federal tax so that subsidies can be provided to those utilities that must install scrubbers to reduce their SO₂ emissions.

4. Electric customers served by utilities using low cost, high sulfur coal without scrubbers pay lower rates than customers of utilities that have reduced emissions.

The Department of Energy (DOE) annually publishes data on typical residential electric bills. This DOE information demonstrates that utilities continuing to use low cost, high sulfur coal without scrubbers have low rates. Rates for those utilities are well below national averages unless the utility also happens to have a high cost or cancelled nuclear power plant.

States and regions served by utilities that have already acted to reduce emissions have been disadvantaged by higher electric bills (to pay for lower sulfur fuels and pollution control equipment) compared to areas served by utilities that have continued to use low cost, high sulfur coal without scrubbers.

Consumers of electricity provided by utilities with low emissions -- individuals, businesses and institutions -- have been disadvantaged compared to customers of utilities with high emissions. Business and industry in regions that have already incurred costs to reduce emissions have endured a competitive disadvantage because they have had to pay more for electricity.

Utilities serving many major cities -- such as Boston, Hartford, New York, Detroit, Chicago, Minneapolis, Denver, Houston, Dallas, New Orleans, Oklahoma City, Phoenix, Salt Lake City, Seattle, San Francisco, Los Angeles and San Diego -- as well as many areas outside cities already have achieved low emissions.

* Ohio, Indiana, Pennsylvania, West Virginia, Georgia, Missouri, Illinois, Tennessee, Kentucky and Alabama.

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Customers of these utilities have incurred billions of dollars of higher costs for low sulfur fuels and pollution control equipment. They should not now be asked to pay a tax so that customers of utilities that will be required to reduce emissions can continue to enjoy low electric bills.

5. The proposed new tax on electric generation would also be very unfair to certain customers within high SO2 emission states.

Some utilities in states with high emissions have already moved aggressively to reduce their emissions. For example, Commonwealth Edison which serves the city of Chicago and, in total, more than half the people of Illinois, has already reduced SO2 emissions from its coal-fired generating plants. Commonwealth Edison customers have had to pay significantly higher costs of low sulfur coal to achieve emission reductions.

Should these same customers in Chicago and elsewhere in the company's service territory now be taxed to provide subsidies that would hold down the electric bills of customers of utilities elsewhere in Illinois who have enjoyed low rates because their electric companies have continued to use low cost, high sulfur coal without scrubbers?

Similar examples can be found in other states with high SO2 emissions.

6. Claims that pending acid rain legislation would unfairly burden certain states and utility systems are incorrect.

Some who have supported the idea of a Federal tax to provide subsidies to high emitting utilities (so-called "cost sharing") have argued that high SO2 emitting utilities would bear an "unfair" clean up burden under the Administration's proposal. They argue that:

- . The costs that would be incurred by high emitting states are disproportionate to the states' share of total U.S. emissions.
- . The Administration's proposal addresses only emissions from electric utilities and does not include emissions from industrial sources.

Those making arguments of "disproportionate burden" ignore several important facts:

- a. First, they ignore the fact that utilities that have already reduced SO2 emissions (and their customers) have, over the past 20 years, incurred billions of dollars of higher cost for low sulfur fuel, pollution control equipment and operating expenses to achieve their low emissions. These past expenditures should not be ignored.

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- b. Second, the Administration's acid rain proposal (and most others pending in the Congress) focus on high emitting coal-fired generating plants because:
- . These plants account for an overwhelming share of total U.S. SO₂ emissions, and
 - . Emissions from large SO₂ emitting sources can be reduced at a much lower cost per ton than small industrial sources of SO₂.
- c. Even the low emitting utilities will bear high costs when acid rain legislation takes effect. Utilities with low emissions will face significantly higher cost for lower sulfur fuels because there will be greater competition for those fuels -- particularly from utilities that will be required to make large emission reductions.
- d. The states with high SO₂ emissions from utilities would not escape significant emission reduction costs or bear a significantly less proportionate burden if industrial sources of SO₂ were also addressed by the legislation. Many of the same states have significant emissions from industrial sources. In fact, 9 of 10 states that have highest emissions from utilities are among the top 15 states in SO₂ emissions from industrial facilities.
7. The "polluter pays" principle that has been followed since the Clean Air Act was first enacted should be maintained.

Most U.S. programs for reducing pollution of the environment are based on the fundamental principle that the "polluter pays." That is, the owner of a polluting facility and, ultimately, those who benefit from the product or service provided by a polluting facility -- not those affected by the pollution -- should pay the costs of pollution reduction.

Following the "polluter pays" principle helps assure that the social costs of pollution are internalized in the cost of producing the products or services provided by the polluting facilities. The costs are then passed on to customers through the price they pay for those products or services.

Providing subsidies to utilities with high emissions would violate the "polluter pays" principle and remove the cost of pollution reduction from those who benefit from products or services created by the polluting facility.

Imposing a tax on electric generation nationwide to provide subsidies for states with high emissions would penalize electric customers in areas that have already reduced emissions and "reward" utilities that have lagged behind. Deviating from the "polluter pays" principle by taxing all electric customers would set a bad precedent. It would suggest that a polluter should benefit by delaying action to reduce emissions -- or be rewarded for delaying action.

C. We endorse the President's proposal to permit owners and operators of plants that must reduce emissions to select the most cost-effective way of achieving emissions reductions.

An important principle adopted in the President's acid rain proposal is that owners or operators of facilities that must reduce SO₂ emissions should be allowed to select the most cost-effective means for reducing emissions from their facilities. We believe this is a critically important concept and urge the Subcommittee to adopt it in the legislation that it reports out.

Freedom of choice in how emissions are reduced would alleviate the cost burden on customers of both high and low emitting utilities. Owners and operators of facilities are in the best position to identify the lowest cost ways to achieve the overall emission reductions for their company and, thus, will be able to meet requirements with the least cost impact on electricity users.

The concept of allowing "bubbling" of emissions across a company's various facilities is also important in achieving emission reduction requirements at lowest cost. We urge you to continue this concept and not adopt unit-by-unit requirements.

In this connection, we note that the recently released description of a bill that will be introduced by Senators Mitchell and Baucus refers to a specific emission limit on oil-fired generating units. Such a unit-by-unit limit would be inconsistent with the freedom of choice and bubbling concepts that are necessary in order to achieve the most cost-effective emission reductions. Specific unit-by-unit limits could also interfere with plans to use natural gas in repowering or converting units now dependent upon foreign oil.

A workable system to allow trading of emission allowances will also be important in holding down the costs of total nationwide emission reductions. We also urge that trading not be encumbered by complex processes that inhibit its use.

We are aware that the Administration's selection of 1985 as the base year for determining emission reduction requirements imposes unrealistic requirements for certain facilities. We urge you to consider carefully the impact of the Administration's proposal and address the problems that it presents.

D. We urge that incentives for energy conservation be included in acid rain legislation.

Experience in New England and elsewhere has demonstrated that energy conservation can be a very cost-effective way of simultaneously meeting energy requirements and reducing the adverse effects on the environment that would otherwise occur as the demand for electricity grows.

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Switching to a lower sulfur fuel will result in reduced SO₂ emissions. Installing a scrubber will also reduce SO₂ emissions but it will also result in greater use of energy and water and result in creation of more waste products. Energy conservation, on the other hand, can result in reduced emissions of SO₂, nitrogen oxide (NO_x) and carbon dioxide (CO₂); reduced use of fresh water; and various other benefits.

We believe that acid rain legislation should provide specific incentives to encourage energy conservation and would urge you to consider doing so.

E. We urge that conflicts be avoided between the recently adopted U.S.-Canada Free Trade Agreement and proposals in acid rain bills to tax electricity imports.

As you are well aware, the governments of the U.S. and Canada recently adopted the U.S.-Canada Free Trade Agreement. We strongly supported that action and believe the Agreement will provide substantial economic benefits to both countries in the years ahead.

We would note, however, that proposals in several pending acid rain bills to tax electricity imports would be inconsistent with commitments made by the U.S. Government when it adopted the Agreement. More specifically, several pending bills would:

- . Impose a tax on electricity generated in the U.S. using fossil fuels (oil, gas and coal);
- . Exempt from a tax electricity generated in the U.S. using nuclear or hydro power; and
- . Impose a tax on all electricity imported into the U.S., including that generated by nuclear and hydro power.

We understand that these tax proposals would be considered discriminatory and thus inconsistent with the Free Trade Agreement. This problem could best be avoided by not attempting to impose any tax on electric generation.

G. Conclusion.

In closing, I would note that President Bush specifically preserved the "polluter pays" principle in the legislative proposal that he submitted. He rejected the idea of imposing a new tax to provide subsidies to utilities that must achieve emission reductions. The Administrator of the Environmental Protection Agency has affirmed that the President remains opposed to a tax and subsidy such as that proposed by some members of Congress.

Thank you for the opportunity to present this statement.

STATEMENT OF GOVERNOR ROY ROMER OF COLORADO

ON BEHALF OF
THE ALLIANCE FOR ACID RAIN CONTROLBEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

October 4, 1989

Thank you, Senator Wirth, for that introduction. And thank you, Mr. Chairman, for inviting me to be here today. I am Roy Romer, Governor of Colorado. I am testifying today on behalf of the Alliance for Acid Rain Control.

The Alliance for Acid Rain Control is a bi-partisan coalition made up of 14 current and former governors from many regions of the country, as well as representatives of a number of public interest groups, industry, and academia. We are old hands in the acid rain debate. Members of the alliance have testified before you several times in recent years and we have helped draft several acid rain bills, including the Proxmire-Simpson-Humphrey bills of the last two Congresses.

Today, we in the alliance are very optimistic about prospects for environmentally tough, yet cost-effective and equitable acid rain legislation. We believe the Administration's acid rain proposal, S. 1490, embodies important principles and can serve as the basis for a sound legislative solution.

The proposal mirrors the long-standing policy recommendations of the alliance. It also reflects the recommendations of other groups and borrows ideas from past bills, such as the Proxmire-Simpson bill and the 1986 Mitchell bill. It is this melting of many good ideas from many people that makes it a strong proposal.

Today, let me touch on what we think are the key provisions of the bill and why we believe they deserve support. I also will share one idea we have had which might improve on the bill.

The core of the bill is the 10-million-ton sulfur dioxide emission reduction target. Achieving and maintaining a 10-million-ton reduction below 1980 emission levels is a tough environmental target which many in the alliance have sought since the inception of the acid rain debate. It has been one of the cornerstones of our position, because it marks the point at which significant environmental protection can be achieved at a reasonable price.

We believe this proposal is tough environmentally, and yet has a high chance of success because it relies on three principles which we believe must underpin any new acid rain legislation.

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First, the legislation should be technology-neutral. It should not mandate the use of scrubbers or any other specific technology. It should set a goal for reduced emissions and allow utilities the greatest possible flexibility in reaching that goal.

Second, the legislation should use market mechanisms to the greatest extent possible. The open market is the most efficient allocator of resources. To squeeze the greatest benefit out of each dollar, the legislation should allow utilities to buy and sell emissions reductions.

Third, the legislation should be based on the principle that the polluter pays. This is an equitable rather than a punitive measure. Many utilities in this country already have reduced emissions greatly at their own expense and at the expense of their customers. Likewise, many of the dirtier utilities have been able to supply their customers some of the cheapest power in the country. We simply do not believe it is appropriate to make everyone pay to bring the dirtier utilities up to standard.

The alliance has long been committed to these principles. We believe they will ensure that consumers get the biggest bang for their environmental buck. We firmly believe that environmental protection and economic competitiveness go hand in hand. They are not and should not be seen as mutually exclusive.

Let me say I understand that much of the debate on acid rain centers on the potential effects on the high-sulfur coal industry and those who work in that industry. As Governor of a state whose economy depends in large part on extractive industries, I understand the importance of the high-sulfur coal industry to many regions of this country. And as the Governor of a state in a region blessed with an abundance of clean, low-sulfur coal, I acknowledge that part of the debate is over market share.

But let me say that the members of the Alliance for Acid Rain Control represent a variety of regions, most of which have no significant deposits of low-sulfur coal. What motivates us as a group, in addition to our concern for the impacts of acid rain, is our common concern for the consumer -- the end user of the energy being produced and the one who inevitably pays the bill.

This is the basis of the first principle I outlined -- that the legislation be technology-neutral. Some people believe that acid rain legislation should mandate the use of scrubbers. They often are motivated, as I noted above, by an understandable desire to protect the market for high-sulfur coal. However, the EPA and others have

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estimated that the cost of that strategy would be several hundred thousand dollars per year for each and every job saved. It might also result in the loss of jobs in energy-intensive industries, such as aluminum and chemicals, which could be hard hit by higher energy bills. We believe the costs of such an approach simply are too high.

The pollution reductions we seek will cost society far less if we allow utilities to choose how they get there rather than mandating a specific technology. Similarly, reductions will cost less if we allow them to be traded on the open market. The outcome will be the highest value for the consumer dollar, which is in everyone's best interests. We also believe the outcome will be a higher overall level of employment, because we can focus on effective solutions rather than capital-intensive regulatory structures.

Let me also expand on the principle that the polluter should pay. Some people believe that the burden of paying for emission reductions at the nation's dirtiest utilities should be shared by all consumers, not just those who buy from those utilities. However, we firmly believe that cost sharing, or subsidizing efforts to clean up dirty utility emissions, is unfair and inequitable.

It is true that some regions of the country will have to reduce emissions more than other regions of the country. But that is because many utilities already have cleaned up, usually at considerable expense. For instance, our neighbor state of New Mexico already scrubs low sulfur coal at every one of its power plants without the benefit of subsidies. On the other hand, the state of Ohio has installed scrubbers on only 2 of its 110 power plants, most of which burn high-sulfur coal. We simply do not believe the citizens of New Mexico, or of any other state or region which has taken the initiative to clean up its plants, should now be forced to subsidize clean up efforts in Ohio.

About half of the power plants with scrubbers in this country are in the West (72 out of 148), largely as a result of the percentage reduction requirements of the 1977 Clean Air Act Amendments. In almost every case, they are scrubbing low-sulfur coal. There was no talk of subsidies for the West in 1977, when the percentage reduction requirements were added to the Clean Air Act. Given the pollution-control expenses we have incurred over the last 12 years, it is impossible to justify making the West and other regions of the country subsidize those which still lag behind in 1989.

In my state of Colorado, with a population much smaller than Ohio and where we burn low-sulfur coal, we already have four scrubbers in place. These facilities average 0.2 pounds per million BTUs, well

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below our own tight standard of 0.4 pounds for new sources. The Wyoming standard incidentally is 0.2 pounds per million BTUs. In addition, at my request, the Public Service Company of Colorado is installing new technology to significantly reduce sulfur dioxide and nitrogen oxide emissions from Denver-area power plants. These plants already are under the 1.2 pounds per million BTU rate contemplated in this legislation. We're taking them down to 0.4 pounds per million BTUs.

We are doing this to cut down on the gasses which contribute to our winter haze problem. We are doing it without any federal mandate, and we are paying for it ourselves. It will cost \$11 million in capital costs and \$7 million in annual operating costs. We ask for no subsidy from any other region of the country.

Furthermore, most of the utilities which are the largest polluters and most often are mentioned as beneficiaries of cost sharing already have very low electric rates. In fact, eleven of the 13 utilities most likely to be subsidized under cost sharing currently have electric rates below the national average. I have attached to my testimony a table comparing the electric rates of these utilities with the national average.

Looking at these rates, one wonders, how it would be fair to tax the customers of Montana-Dakota Utilities or Central Maine Power, who already pay the national average electric rate, to subsidize the customers of Ohio Power, a subsidiary of American Electrical Power, who pay 35 percent below the national average.

Of course, one need not travel all the way from Ohio to Maine or Montana to find the inequities of "cost sharing." Proponents of subsidies have cited data which show that some midwestern states have some of the highest electric rates in the country. That data is misleading because it masks enormous differences between utilities within the same state. The classic example of this is Illinois, which has one of the highest average electric rates in the country. The reason Illinois has a high state-wide average is that Commonwealth Edison, a relatively clean utility which serves Chicago and northern Illinois, which relies heavily on nuclear power. A residential customer in Commonwealth Edison's service territory will pay about 20 percent more than an identical customer to the south who is served by Illinois Power Co., a relatively dirty utility.

Again, one wonders if it is fair for customers who already pay Commonwealth Edison's high electric rates to subsidize customers who pay Illinois Power's much lower rates.

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My point about cost sharing is that many consumers already have paid to clean up the power plants which supply them. We do not believe that Congress now should make them pay a second time to help those who have enjoyed the low electric rates which go with not cleaning up their power plants.

Furthermore, one can argue that the Bush proposal already includes a hidden form of cost sharing in the form of emission credits. I have said before that the Alliance firmly supports the use of market mechanisms and emissions trading. We simply wish to point out that the specific structure of the credit program proposed provides an implicit bonus to dirtier plants because it makes no allowance for clean up efforts some of us already have made.

Let me explain. The proposal would require any power plant which is dirty today to reduce its emission rate to 1.2 pounds per million BTUs. If it chooses to go below the 1.2 pound level, it can turn around and sell emission reduction credits equal to the difference between its new emission rate and the 1.2 pound emission rate.

It is evident that many of these credits will accumulate in the lower Midwest, where the most cost-effective reductions can be made. It also is evident that the utilities which are going to buy those credits are the cleaner utilities in the West, South, New England and upper Midwest. Since these utilities already are relatively clean, they will be less able to generate reduction credits and more likely to want to buy credits from the dirty utilities in order to bring new capacity on line.

In effect, the clean utilities of the West and upper Midwest will pay to help those in the lower Midwest further reduce their emissions. When you add to this equation the provision allowing governors to order the continued use of local coal, you can see why we say the President's plan already encourages a form of cost sharing. A governor can make the decision to force continued use of high-sulfur coal by a local utility, secure in the belief that this will protect jobs as well as generate reduction credits to be sold to reduce the cost of cleanup in his state.

In short, under the Bush proposal, dirty plants, located primarily in the lower Midwest, will get reduction credits for going below a 1.2 pound emission rate. Those of us who are already below 1.2 -- well below in many cases -- would get no reduction credits.

I do not mean to say that this plan is terribly unfair to the West. Many of us have set very stringent local standards for our own reasons. We have local air quality issues and potential regional

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visibility problems which argue for these tight controls. Nor do I think we have utilized all our potential offsets. But my point is that in some cases these offsets will be very hard to find precisely because the existing plants are so clean.

Let me give an example. If the Gavin power plant in Ohio, which currently emits well over 5 pounds of sulfur dioxide per million BTUs, reduced its rate to 0.5 pounds by installing a scrubber, it could sell emission credits equal to the difference between a 1.2 pound rate and its new 0.5 pound rate. By contrast, the Colstrip plant in Montana is currently emitting at a rate below 0.1 pound, but would have no credits to sell under the Bush proposal. So if Montana power wanted to bring on line a new plant at Colstrip, it would likely have to look to Ohio or the Midwest to find the required offsetting emission reductions, because there is only one small dirty plant in Montana from which to purchase offsets or credits.

So the proposed system already ensures a degree of cost sharing. Adding a national electric tax to the Bush proposal would give dirty utilities a second subsidy and reward them even more for not cleaning up sooner.

I applaud this committee for not supporting national electric tax subsidies in the past, and urge you to hold to that line this year. You may also want to look more closely into the system of emission credits set up by this bill to see if there is a way more equitably to determine credits, so that those of us who already have cleaned up can share in them.

In light of this last point, let me offer one idea for improving the Bush acid rain proposal. It concerns the emission offset requirement for new power plants. There are clearly many benefits to this provision. Foremost among these is that requiring offsets to emissions from new plants ensures that the level of protection from acid rain achieved by the year 2000 will be maintained well into the future. We do not want to clean up the acid rain problem today, only to face renewed threats in the future because we did not insure that emissions could not creep back up.

There is, however, a great deal of uncertainty about whether growth states, and clean growth states in particular, will be able to find willing sellers of emission credits when they need to expand. Many fear that the currently high-emitting utilities, which would have most of the emission reduction credits, will hoard them. Thus, economic growth in states such as Montana, Wyoming, Louisiana, and Minnesota could be held hostage by the actions of dirty utilities elsewhere.

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The staff of the Alliance for Acid Rain Control has been working on one possible solution to that problem which I would like to share with you. The idea is to require cost-effective emission reductions from industrial sources of sulfur dioxide as well as utilities. Such a requirement could reduce sulfur dioxide emissions an additional 500,000 to 1,000,000 tons a year. These reductions could be placed in a pool managed by EPA to insure that offsets are available in the early years after 2000 to utilities wishing to bring new plants on line. These credits could either be auctioned off by EPA or given to sources which face particular difficulty in obtaining offsets.

Such a pool would perform two vital functions: 1) it would prime the pump of the emission credit marketplace, and 2) it would provide a cushion for utilities in clean states through the year 2010, when emission credits are projected to become less scarce due to the retirement of inefficient and dirty older power plants. It would accomplish both these objectives without eliminating the emission cap and without weakening the environmental benefits of the acid rain control program.

Although the Bush proposal does not subject industrial sources to any emission control requirements, reducing the contribution industrial sources make to acid rain is not a new idea. The Proxmire-Simpson bills of the last two Congresses and the Waxman-Sikorski acid rain bills, past and present, all included industrial sulfur dioxide emission controls. The staff of the alliance would be happy to assist members of this committee who wish to pursue this idea further.

Finally, let me say that the alliance believes the best approach to acid rain control is to include in the reductions the largest number of utilities at the earliest possible time. We all operate in the public sector and understand the need for compromise to move important public policy ahead. We simply would suggest that it makes more sense to target more rather than fewer plants. To narrow the focus would seem to strengthen the case of those who favor cost sharing. In contrast, targeting more than 100 plants for controls spreads the burden and encourages more cost-effective emission reductions.

I would like to close by saying that we favor retention of the offset requirement for new power plants because of its significant environmental benefits, including the protection of visibility in our part of the country. The key is to make sure the cap is workable, and that means making sure that there will be emission offsets available for purchase and that the customers of clean utilities will not be forced to subsidize the clean up of dirty utilities twice -- once by buying emission credits from them and a second time through some sort of national electricity tax.

Thank you for the opportunity to testify. I would be happy to answer any questions you may have.

TABLE I.

SAMPLING OF UTILITIES LIKELY TO RECEIVE SUBSIDY UNDER A COST SHARING PROGRAM

UTILITY (STATES)	1987 SO2* EMISSION RANK	TOTAL** 1987 AVERAGE PRICE/KWH SOLD (CENTS)	% VARIATION FROM** NATIONAL 1987 AVERAGE ELECTRIC RATE
SOUTHERN COMPANY (GA, AL, FL, MS)	1	5.68	-13%
AMERICAN ELECTRIC POWER (OH, WV, VA, IN, KY)	2	5.03	-23%
ALLEGHENY POWER SYSTEM (WV, PA, MD)	4	4.92	-25%
GENERAL PUBLIC UTILITIES (PA)	5	7.35	12%
PUBLIC SERVICE CO OF IN (IN)	7	5.87	-11%
UNION ELECTRIC CO (MO)	8	6.49	-1%
OHIO EDISON (OH, PA)	9	6.95	6%
ILLINOIS POWER CO (IL)	10	6.14	-6%
CENTRAL IL PUBLIC SERV (IL)	17	6.59	0%
DAYTON POWER & L&T (OH)	18	6.02	-8%
KENTUCKY UTILITIES CO (KY)	23	4.59	-30%

Tennessee Valley Authority (ranked #3) & Ohio Valley Electric (#6) are publicly owned. Therefore they do not have to file form EIA-759, and so these data were not available.

*Source: Energy Information Administration, U.S. Department of Energy, Form EIA-759.

**Source: Regulatory Research Associates, Inc. Utility Focus, May 30, 1989.

TESTIMONY

PRESENTED BY
DAVID N. PARKER*
ON BEHALF OF THE
ALUMINUM ASSOCIATION, INC.

OCTOBER 4, 1989

BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
ON
THE SUBJECT OF
ACID RAIN

*DAVID N. PARKER
PRESIDENT
ALUMINUM ASSOCIATION, INC.
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WASHINGTON, D.C. 20006

Mr. Chairman and members of the Committee:

I am David Parker, President of the Aluminum Association, Inc. I am here today to testify on the subject of the cost of acid rain control and the international competitive implications to those U.S. primary aluminum producers whose operations would be significantly and adversely affected by proposed acid rain control legislation. Those facilities are listed in Attachment 1.

The member companies of the Aluminum Association, Inc. represent virtually all of the domestic production of primary ingot and approximately 85 percent of the shipments of U.S. aluminum mill products. This includes all of the producers of rigid container sheet from which aluminum cans are made. Other mill products include sheet and plate; foil; forgings and impact extrusions; extrusions; electrical conductor and wire, rod and bar. In addition to producers of primary ingot and mill products, the Association's membership also includes secondary smelters, foundries and producers of master alloy and additives.

The Association is a primary source of statistics, standards and economic and technical information on aluminum and the aluminum industry in the United States.

Spokesmen for our industry have addressed the subject of acid rain before the Committee on Environment and Public Works on several occasions.

The message I present today is similar to what the aluminum industry has said before: Electricity is critically important to primary aluminum

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production, and the implementation of proposed acid rain control legislation will substantially increase the cost of electricity for aluminum operations whose suppliers derive their power from coal-fired generation. Just as crucial is the question of the inclusion of additional SO₂ and NOX controls on industrial sources, which in and of themselves could add significant capital and operating costs to aluminum facilities with little contribution to reducing emissions. These increased costs will have significant long-term negative affects on the U.S. primary aluminum industry.

In an October 1988 report entitled The Potential Impact of Acid Rain Legislation on the Domestic Aluminum Smelting Industry, the United States Bureau of Mines (BOM) concluded, "The increases in utility rates which would result from passage of five recently introduced bills were estimated to range from 0 to 10.4 mills per kilowatt hour, depending on the bill and on the particular utility affected. The average increase in electricity rates per bill for the ten aluminum smelters examined in this study was estimated to range from 3.5 to 5.5 mills per kilowatt hour. These rate increases would increase the electricity costs to the U.S. aluminum industry from \$94 to \$150 million, annually. The average cost increase of the ten smelters — per pound of aluminum — was calculated for each bill, and is estimated to range from 2.5 to 4 cents a pound. Smelters located in West Virginia and Ohio would experience the highest cost increases, ranging from 5.2 to 7.7 cents a pound."

The BOM report confirms the analyses of the impact of various acid rain proposals made in 1987 by the Congressional Research Service (CRS) and the Department of Commerce (DOC) which reached similar conclusions about the impact

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of acid rain control legislation on that portion of the domestic aluminum industry which are served by coal-fired electricity generation.

Summary:

Before I discuss the specific impact of pending proposals on affected aluminum plants, I will summarize the points that are the basis for our concern about the impact of acid rain control legislation:

- The cost of electricity accounts for 30 - 40 percent of the cost of producing primary aluminum in the U.S. with the average closer to 33 - 35 percent.
- It takes an average of 7.5 kilowatt hours (KWh) to make a pound of aluminum.
- Since 1978, the cost of electricity for aluminum smelters in the U.S. has gone from the lowest quartile of world costs to the highest.
- At present, the average cost of electricity for U.S. aluminum plants is about 28 mills per KWh (2.8 cents) and for aluminum plants in the rest of the free world is 20 mills (2.0 cents).
- During the period of rising electricity costs (1978-1986), the number of primary aluminum plants fell from 32 to the 23 presently in operation. The U.S. share of free world primary aluminum capacity declined from 45 percent in 1970 to 28 percent in 1987.

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- Six of those plants which closed received electricity from coal-fired generating facilities (the others were supplied by boilers using natural gas as fuel).
- Since the restructuring period (1982-1986), U.S. smelter employment has declined significantly. The eight U.S. plants which would be directly affected by acid rain control proposals account for 40 percent of U.S. primary aluminum capacity; represent an aggregate investment of about \$2.5 billion and provide direct and indirect employment to over 20,000 people.
- Current U.S. smelter production costs are about 60 cents per pound compared to 53 cents in Europe and Australia, 48 cents in Brazil, 47 in Canada and 38 in Venezuela.
- Since 1980, all of the world's new primary aluminum production capacity has been built outside the U.S. where energy costs are substantially lower than in the U.S.
- From 1984 to 1987, U.S. ingot imports have increased 41 percent from 1.944 billion pounds to 2.746 billion pounds. The U.S. supplies 52.5 percent of its aluminum needs by U.S.-based primary production. Recycling contributes another 28 percent and imports contribute the remaining 19.5 percent.

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Potential Impact of Acid Rain Control Legislation on the Domestic Aluminum

Industry:

Pending acid rain proposals would affect the cost of producing aluminum by:

- increasing electricity costs as a result of SO₂ and NOX controls; and
- by requiring additional controls on SO₂ and NOX emissions from industrial processes.

Electricity Cost Increases:

The studies by the BOM, DOC and CRS substantiate the impact of the cost of acid rain controls on the domestic primary aluminum industry.

Among the bills whose impact on the cost of aluminum production has also been analyzed by the BOM is the so called Mitchell Compromise of the 99th Congress. Electricity cost increases attributable to SO₂ compliance strategies which that legislation would have required of the utilities which serve the seven aluminum plants located in Indiana, Kentucky, Maryland, Missouri, and Ohio were estimated to range from 2.7 mills per kWh to 8.3 mills. The study estimated that the resulting increases in operating costs attributable to the proposal: at 2 cents per pound of aluminum produced at the Kentucky plants; 3 cents in Missouri; 3.3 at the Indiana plant; 4.6 at the Maryland plant; and 6.1 in Ohio and West Virginia.

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These plants use approximately 22 billion kilowatt hours of electricity a year. They have an annual electricity bill of over \$600 million (based on an average of 2.8 cents per kWh). The BOM estimated the aggregate annual electricity cost increase under the Mitchell Compromise for those plants at \$114 million, an increase of about 19 percent.

Attached is a summary of responses to an acid rain survey we directed to the seven primary aluminum companies whose plants will directly be affected by the impact of the administration bill. It describes a similar harsh economic impact on affected aluminum facilities.

Industrial Process Controls:

Without knowing which industrial processes will be identified for further emissions reductions, it is difficult to determine whether the limited SO₂ emissions associated with primary aluminum production would be included. If they were, aluminum companies estimate that such costs - for both installation and operation of controls would vary from \$5 million to \$35 million per plant involved for installation and would average about \$3 million for operation and the impact would be on all U.S. primary operations (23 plants).

While we have a firm basis for estimating the electricity cost increases associated with SO₂ controls for our electricity suppliers, the industrial process control question adds a significant element of uncertainty as to the full cost implications of acid rain legislation for aluminum production.

Attached for your review is a comparison of SO₂ emissions and controls

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for a 400 megawatt power plant and an aluminum reduction plant that uses 400 megawatts of electricity. Costs associated with wet scrubbers on an aluminum facility to gather fugitive SO_2 emissions are very high for the amount of reduction achievable; in some cases, they are equal to an aluminum company's share of the cost of controlling SO_2 at the power plant.

Whether the U.S. aluminum industry can absorb any or all of these costs at the time they will need to be paid will depend on the price of aluminum established on several world commodity exchanges on which the metal is traded.

Economic Effects:

Each of the affected plants is an important contributor to the economy of the state in which it is located. A recent study by the Maryland Department of Economic Development, based on a U.S. Forest Service computer model, estimated the economic impact of the Maryland plant on the state's economy at about \$395 million.

The magnitude of these costs on the aluminum industry and the economic importance of the plants involved raises questions about the desirability of requiring such massive investments and the need to risk the possible severe economic dislocations which could ensue from the enactment of any one of a number of proposals to control acid rain.

Any idea that aluminum primary plants will be able to avoid the impact of acid rain controls by passing the costs on or by having them absorbed by their

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October 4, 1989
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electricity supplier is unrealistic.

The variable rate arrangements under which a number of U.S. and other free world country aluminum companies operate are designed to assure that the electricity supplier recovers full value for the electricity sold to the consumer over the course of the business cycle. In the U.S., variable rates are established in a manner to assure that the electricity supplier, at all times, receives sufficient revenue to cover production costs.

By contract, U.S. aluminum companies are required to reimburse their supplier of electricity for any additional production costs attributed to acid rain controls. One of those companies estimates that coal switching will result in a 1.7 mill/KWh increase in their variable rate.

Variable rate schemes, whether in the U.S., Brazil, Iceland, or elsewhere, are a recognition of the cyclical nature of the aluminum metal business and are an attempt by utility business managers to assure their companies full revenues while accommodating the cyclical nature of the aluminum business.

The variable rate arrangement imposed on the two smelters in Western Kentucky was created to solve the financial problems of the Big River Electric Co-op.

The nature of the relationship between primary aluminum producers and their electricity suppliers is such that aluminum operations must pay their full share of the suppliers' revenues over the business cycle or the supplier will

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be in financial difficulty because those costs can not be borne by other customer classes. Primary aluminum production facilities represent between 5 and 100 percent of the baseload of the supplying utility plant, company or system. (4 are each 100 percent, of which two self-generate and two are supplied by dedicated power plants; 2 are jointly 70 percent of the baseload of one supplier; one is 20 percent; and one is 5 percent.)

The need for the electricity supplier to receive adequate compensation to cover production costs will also assure that the cost impact of acid rain controls will be felt by industrial customers as soon as expenses to implement controls are incurred by the electricity supplier.

The additional substantial electricity costs associated with the implementation of acid rain controls will depress the economic cycle of the aluminum metal business by accentuating the downward movement and retarding the upswing by increasing production costs.

Conclusion:

In conclusion, I thank the Subcommittee for allowing me to present the testimony of the aluminum industry. I hope we have conveyed to you the urgency of this issue to the U.S. aluminum industry. We are asking you to focus on the serious problems acid rain legislation poses for the aluminum industry.

The aluminum industry is greatly concerned that the costs of implementation associated with any of the various regulatory proposals for controlling acid

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rain are so onerous that the result would be severe competitive damage to major industrial users of electricity. If acid rain legislation is written, it must include provisions to mitigate the impact on all of those threatened by the increased cost of electricity - residential, commercial and industrial. Otherwise, severe economic dislocations and the possibility of plant closures will be with us.

Information developed by aluminum companies and the Federal Government clearly demonstrates that pending acid rain control legislation raises serious economic and energy concerns for the aluminum industry. The vulnerability of the U.S. aluminum industry to competition from foreign producers advantaged by significantly lower electricity costs must be addressed in any acid rain debate.

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Attachment 1

Aluminum Smelting Plants Significantly Threatened by Electricity
Rate Increases Implied in Acid Rain Legislative Proposals
Based on 100% of Electricity Derived From Fossil Fuel Generation

Indiana:	Warrick
Kentucky:	Hawesville Sebree
Maryland:	Frederick
Missouri:	New Madrid
Ohio:	Hannibal
Texas:	Rockdale
West Virginia:	Ravenswood

G77R2AR

ACID RAIN CONTROL LEGISLATION

Following are the summarized responses to the Acid Rain survey directed to those seven primary aluminum producers who would be most directly impacted by the adoption of HR 3030.

The primary aluminum smelting locations surveyed represent a total installed capacity of 1,565,000 metric tons equal to 40% of the total installed primary capacity of the United States aluminum industry.

The questions directed and replies received were:

What is the anticipated percentage increase in electrical power cost (in 1989 dollars) to meet Phase I (1996-2000) SO₂ compliance as specified by H.R. 3030?

and

To meet Phase II (after December 31, 2000) SO₂ compliance as specified by H.R. 3030?

With respect to Phase I individual company estimates ranged from an estimated 4% to 27%. The average increase anticipated by all replies was 13%.

Phase II individual company responses ranged from a low of 7% to a high of 56%. The average of all replies 26%.

The anticipated achievement of Phase I SO₂ compliance and the above power cost increase is based on:

New or retrofit scrubbers	<u>68% of the aluminum capacity reported</u>
Fuel Switch to low-sulfur coal	<u>32% of the aluminum capacity reported</u>
Boiler modification	_____
Capacity retirement/replacement	_____
Other (re: _____)	_____

Phase II achievement is based on:

New or retrofit scrubbers	<u>80% of the aluminum capacity reported</u>
Fuel Switch to low-sulfur coal	<u>20% of the aluminum capacity reported</u>
Boiler modification	_____
Capacity retirement/replacement	_____
Other (re: _____)	_____

If all or part of Phase I compliance is based on a fuel switch to low-sulfur coal, how much of an increase in coal cost per ton has been anticipated?

A limited number of replies reported an average anticipated increase of \$5.50 per ton which equates to an estimated percentage increased cost per KWH of 10.8%

Will the bill provision enabling Governors of any state to preclude the use of (lower sulfur) coal from outside the state likely will have serious or not so serious impact on your situation?

Some sixty percent of the respondents indicated this provision will result in a serious impact on their situation.

(in some instances the aluminum facilities are located in one state while the source of power is in another.)

What is the estimated capital cost (in 1989 dollars) to meet Phase I SO₂ compliance?

The estimated pass-thru-cost to primary aluminum producers is in excess of \$1 billion or an average of approximately \$688 per ton of installed aluminum capacity. Individual company estimates ranged from \$26 million to \$500 million.

To meet Phase II SO₂ compliance as specified by H.R.3030?

The additional estimated pass-thru-cost for Phase II compliance totaled almost \$500 million. Individual estimates ranged from zero (all expenditures included in Phase I) to \$166 million dollars.

Will the cap on emissions, based on the averaged heat input for 1985 through 1987, effectively reduce SO₂ emissions for your electricity supplier below the 1.2 limit during Phase I?

Just one respondent answered "yes" to a range of 0.9-1.0 pounds SO₂/MMBTU at an estimated additional cost of 0.5 mill/KWH.

Even though there are no NO_x emission limits listed in H.R.3030, EPA may establish NO_x levels. If reduced levels are established, what is the estimated capital cost (1989 dollars) of lo-NO_x burners?

Replies to this question ranged from an estimated cost of \$1.7 million to \$30 million plus several replies of "unknown". The estimated industry total expenditure exceeds \$60 million.

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October 26, 1989

The Honorable Joseph I. Lieberman
United States Senate
Washington, D.C. 20510-0703

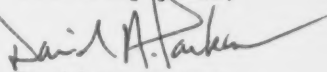
Dear Senator Lieberman:

Following my appearance before the Subcommittee on Environmental Protection at hearings on acid rain on October 4, 1989, several questions were propounded to me on your behalf. Those questions addressed the health costs of air pollution and the cost of scrubbers.

Enclosed are my replies, copies of which have been provided to the staff of the Committee on Environment and Public Works.

I appreciate the opportunity to work with you on this important issue.

Sincerely yours,



David N. Parker
President

DNP:gr

Enclosure

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Reply of David Parker to Written
Questions Submitted to Him on Behalf of
Senator Lieberman Following the
October 4, 1989
Subcommittee on Environmental Protection
Hearing On
Acid Rain

Question One

You discuss at length in your testimony the costs to the industry of complying with acid rain legislation. But have you calculated the health costs associated each year with air pollution (for example, the American Lung Association has estimated the costs at \$40 billion per year, and Administrator Reilly last week agreed with this number)?

Answer

The health problems associated with air pollution go far beyond the input of acid rain.

Costs to the nation associated with the adverse effects of air pollution are attributable to a wide range of private and public actions and are well beyond the capability of any one industry to estimate or analyze.

Question Two

In estimating the impact on your industry and the consumers, have you discussed cost of scrubbers with the manufacturers? We have heard some strong testimony yesterday that the cost of scrubbers has fallen dramatically and is still falling and that, according to EPA, the actual costs of retrofitting plants will be lower than previous estimates to Congress.

Answer

With respect to cost estimates, since our industry's primary involvement in acid rain control is as a consumer of electricity,

David Parker's Reply to Senator Lieberman's
Questions from 10/4/89 Hearing
Page 2

we have to rely in part for estimates of the cost of control strategies and tactics on the electricity suppliers. We sincerely hope that the cost of scrubbers and other control technologies will be lower than earlier estimates. We are concerned, however, that the deadlines for installing control will be so tight and the degree of control which will be mandated so stringent that the capital and operating costs which will need to be incurred will be so enormous and so onerous as to damage our industries' economic viability.

We continue to support the availability of the greatest number of technological and operational options for meeting the requirements of the Clean Air Act.

BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

STATEMENT OF
JON PRENDERGAST
MANAGER, ENERGY POLICY
LTV STEEL COMPANY
October 4, 1989

I am Jon Prendergast, Manager, Energy Policy, Energy Department, LTV Steel Company. My testimony today has the broad support of the American Iron and Steel Institute, the American Paper Institute, the American Textile Manufacturers Institute, the Chemical Manufacturers Association, the Council of Industrial Boiler Owners, and the National Environmental Development Association/Clean Air Act Project. A list and description of these groups is attached as Appendix A.

I. INTRODUCTION

Because additional legislated emission control measures will have a major financial impact on its members, and, in fact, on most U.S. manufacturers, American industry has participated in the acid rain debate for several years. During that same period, we also cooperated extensively with the National Acid Precipitation Assessment Program.

We believe that industrial boilers, industrial cogenerators, and industrial process sources should not be

subjected to mandated emissions limitations under an acid rain control program. Coverage of these sources would stifle growth of efficient and less expensive power production, would be excessively costly with minimal environmental benefit, and would further weaken the international competitive position of U.S. manufacturers.

II. NON-UTILITIES HAVE ALREADY
DRAMATICALLY REDUCED SO₂ EMISSIONS

Several studies have noted the decline of SO₂ emissions from industrial sources, most notably, the Joint Report of the Special Envoys on Acid Rain (January 1986) by Drew Lewis of the United States and William Davis of Canada, which states that such emissions were down 46% from 1973 to 1983. This decline is further confirmed by EPA in its "National Air Pollutant Emission Estimates, 1940-1983" (December 1984), which states that SO₂ emissions from industrial source fuel combustion declined 49%. According to the National Emissions Data System, SO₂ emissions from industrial boilers have declined 50% in the 1980-1985 period.

The causes of this downward trend are several. First, due in large part to dramatic energy conservation measures undertaken by the industry in the last decade, industrial end use consumption per unit of industrial output has actually decreased by 29% from 1971 to 1985 despite overall industrial growth, according to the Energy Information Administration. With this improved energy efficiency, today most companies no longer need to expand their industrial steam generating base. This is

evidenced by surveys which show approximately 80% of new industrial boiler installations replacing older, dirtier, less efficient units. This boiler replacement process, by itself, is resulting in significant SO₂ emission reductions.

In addition, industry is using lower sulfur fossil fuels and increasing its use of self-generated wastes as fuels. Data from the American Boiler Manufacturers Association, for example, show that on an aggregate input basis, 44% of all industrial boilers sold in the period 1984-1985 were designed to burn waste fuels or to utilize waste heat. In a majority of cases, these new units will burn fuels of very low sulfur content and produce low NO_x emissions. Moreover, new low polluting solid fuel combustion technologies are being installed by industry at a rapid rate.

Finally, various provisions of the existing Clean Air Act are working to limit SO₂ and NO_x emissions. For example, New Source Performance Standards (NSPS) issued under Section 111 of the Act governing SO₂ and NO_x emissions from new industrial boilers have been in place since 1971 for units with greater than 250 MMBtu/hr. heat input. These standards, which were revised in 1984, 1986 and again in June of this year, now control emissions from new boilers down to an input of 10 million.

It has been industry's role to be the leader in reducing emissions. Costs sharply escalate for further removal and retrofit of existing units and for some boilers, further reductions may be technologically impossible.

III. INCLUDING INDUSTRIALS UNDER ACID RAIN
PROVISIONS -- MINIMAL BENEFIT AT EXCESSIVE COST

Some of the legislative proposals being considered would apply identical emissions limitations to non-utility as are applied to utility sources. Mandating SO₂ emission limitations from non-utility sources is simply not cost effective.

Non-utility units account for a very minor portion of national SO₂ emissions. According to DOE and EPA data listed in Appendix B, the total national emissions from all industrial boilers is less than the 1.8 million tons emitted by the top five utility stations. Legislative proposals which call for a limit of 1.2 lbs/MMBtu, however, would impose exorbitant costs on these relatively small sources; in fact, requiring emission limitations of 1.2 lbs/MMBtu from industrial boilers alone, would reduce national SO₂ emissions by only 1.2% at a cost of more than \$250 million annually. (See Appendix C.)

In addition to an almost insignificant environmental benefit at a disproportionately high cost, more than 70% of the cost burden, as Appendix C indicates, would fall on the five states of Illinois, Iowa, Tennessee, Wisconsin and Indiana. These are substantial regional inequities by any measure.

Although, process emissions also account for a minor portion of total national emissions, they would be even more difficult and expensive to control. Appendix D illustrates the complexity of controlling process emissions.

The eleven identifiable process source categories contain some 305 different process source types. The

complexities and potential costs for developing, implementing, installing, regulating and monitoring 105 different emission control technologies at literally thousands of plants are almost immeasurable and would result in minimal environmental benefit. Forced emissions reductions may necessitate different processes with less efficient, more costly applications that may have social costs greater than the negligible environmental values. To even consider process source emissions limitations would be at the very least an economically imprudent waste of administrative, technological and manufacturing resources.

IV. INDUSTRIALS WILL BEAR THE ECONOMIC
BRUNT OF ACID RAIN CONTROLS IN ANY CASE

Not only do utility boilers account for the overwhelmingly majority of national SO₂ emissions but most importantly, manufacturers, especially those in energy-intensive industries will bear the largest percentage of the increased costs of controls on utilities through significantly increased electric rates.

Industry as a whole consumed 3.0 quads of electrical energy in 1988, at a cost of \$40 billion. Industry will pay more than its fair share of acid rain control costs, as utilities pass through the costs of switching to more expensive fuels or installing new control equipment. For example, in energy intensive companies such as those in the steel industry, acid rain control legislation could mean electric rate increases as great as 25%.

The utility industry is much more capable of achieving a true cost-effective acid rain control program because of large unit size and economy of scale. Utility boilers are on average 30 times larger than industrial boilers, and therefore enjoy favorable economies of scale in reducing air emissions as compared with industrial boilers. Of equal importance, non-utility sources burn a wide variety of fuels, serve a wide range of industries, and may be subject to severe hourly, daily and seasonal load changes, all leading to increased control complexities and costs. For example, the cost of removing a ton of SO₂ from a non-utility boiler is 3 to 4 times greater than the cost of the same unit reduction from a utility boiler. Thus, it costs approximately \$400 to remove a ton of SO₂ for utility boilers, as compared to \$1200 or more for industrial boilers. Appendix D demonstrates these relative costs.

In addition, unlike non-utility sources, utilities are able to recover emission control costs without a loss of competitiveness. Utilities can recoup costs for acid rain control programs (principally from ratepayers) by placing them in their rate base, or via automatic pass-through of the costs of less polluting, more expensive fuels.

Industrial steam is of vital importance to American production. Approximately two-thirds of all fuel burned in the U.S. is (1) to raise steam to manufacture products, (2) for process use, (3) to drive mechanical equipment, (4) for space heating, or (5) for on-site generation of electricity. Since

manufacturers cannot automatically pass-through emission control costs without further weakening their international competitiveness, additional legislated emission control measures will involve severe economic consequences for industry -- plant closure, cancellation or extended delay of plant expansion and new plant construction, and severe production cutbacks, with a resulting severe impact on U.S. employment.

Not only will non-utility sources have to absorb the largest percentage of the clean-up costs of the utilities, but also, non-utilities will continue to be subject to stringent and costly air toxic controls, nonattainment and other provisions of the Clean Air Act. Imposing further costly emissions limitations on non-utilities through an acid rain control program would be unduly burdensome and inequitable.

V. COGENERATION - SOURCES OF
LESS COSTLY AND MORE EFFICIENT ENERGY

Some of the legislative proposals would subject acid rain controls to cogeneration units, that is, units which simultaneously produce electricity and steam. Such power producers have become an important source of the nation's generating capacity by producing electricity more efficiently and at less cost than the utility industry, for internal consumption as well as for distribution through the utility grid.

Federal energy policy encourages the creation of such facilities by requiring utilities to buy output at the avoided cost of building new generating plants on their own. These systems now comprise over 30% of all new electric-generating

capacity currently being installed and will account for about 10% of the nation's electrical supply by the year 2000. According to the American Boiler Manufacturers Association, on an aggregate capacity basis, 62.6% or 5/8ths of all industrial boilers sold over the past ten years were for industrial cogeneration, representing a total of about 17,000 MW.

Typical cogeneration systems are twice as efficient as utility power generation, consuming only one-half the fuel and emitting only one-half the pollution per unit of useful energy. Subjecting cogenerators to emissions limitations under an acid rain control program as the Administration's bill (S.1490) would do, will create a serious disincentive to cogeneration and thus severely damage growth of cheaper, more efficient power sources. This contradicts the national energy needs for increased energy efficiency, diverse electric power generation, and less costly new utility plants and contradicts Congressional intent as expressed in the Public Utilities Regulatory Policies Act of 1978.

VI. INCLUDING NON-UTILITIES IN ALLOWANCE SYSTEM -- UNWORKABLE

Subjecting non-utilities to an emissions allowance system, such as in the Administration's bill (S.1490), would unfairly restrict economic growth by industry. As discussed earlier, industry has proven its ability to reduce SO₂ emissions. Consequently, non-utility sources will be eligible for few allowances. Utilities, however, because they generate the vast majority of SO₂ emissions, would be allowed to accrue

the majority of the emissions allowances. Evaluations completed for the utility industry agree that allowances for new non-utility units would only be available from existing sources, and that utilities would likely keep their allowances in-house for use in their own further expansion. Consequently, industrial growth could eventually be halted.

Moreover, the baseline concept, embedded in such a system, fails to take into consideration crucial fuel selection decisions made during the 1985-87 (or any proposed) period. The result is to retroactively bind industry to arbitrary capacity factors and fuel selections which will ultimately restrict market responsiveness and again stifle industrial growth and competitiveness.

Finally, forced participation in an allowance system would cause non-utilities to focus on compliance with regulation rather than the more natural activity of identifying market-oriented opportunities to trade in allowances. The end result would be a lack of available allowances for trading and an unworkable system.

VII. REPEAL OF PERCENTAGE REDUCTION

As we understand it, the Mitchell/Baucus proposal would repeal the percentage reduction requirements of Section 111 of the Clean Air Act. EPA has interpreted this requirement to apply to industrial boilers and we strongly support repeal of that requirement.

No coal-fired industrial boiler can reliably meet the 90% reduction requirement imposed by EPA on new industrial units using today's commercially proven technologies. To consistently meet the EPA rule will require "fuel switching" from coal to natural gas. Therefore, when industry needs to install new boilers, the economic choice will be natural gas-fired equipment instead of oil-fired units, or coal-fired boilers utilizing clean coal technologies. This undermines the national energy policy objective of encouraging maximum fuel flexibility by allowing industrial users freedom of fuel choice.

Moreover, because the EPA rule severely limits industry's option to choose coal, demand for clean coal technologies will be severely reduced and current private development of new clean coal technologies will be halted.

To remain internationally competitive, energy-intensive U.S. manufacturers must be assured of a reliable and flexible supply of fuel. That necessity is impeded under the percentage reduction requirement because the rule results in a bias toward the use of natural gas and away from the use of coal. The need for reliable and flexible fuel supplies is best illustrated by the severe natural gas shortages and curtailments experienced by the manufacturing sector in the 1970's, which resulted in reduced industrial operations and loss of employment. If we were to again experience these shortages or delivery difficulties, the present percentage reduction rule would exacerbate the shortage problems of the 1970's because of its tendency to decrease fuel

flexibility and encourage heavy dependence on natural gas as a boiler fuel. In addition, the rule's artificial mandate of natural gas as the fuel of choice, could potentially cause such fuel supply constraints, resulting in increased natural gas prices for residential and other consumers without fuel switching flexibility.

Finally, because the percentage reduction requirement may delay installation of new cleaner facilities, existing units will be kept in operation, resulting in undesirable and unintended adverse environmental consequences.

VIII. CONCLUSION

We vigorously oppose coverage of industrial boilers, industrial cogenerators, and industrial process sources in any acid rain control program. These sources have already dramatically reduced their emissions, and further emissions limitations would be excessively costly. As compared with utilities, mandating further emissions limitations from these minor sources of emissions would provide minimal environmental benefit at comparatively major economic, administrative and social costs. Coverage of industrial cogeneration units would inhibit growth of efficient and cheaper power sources contrary to national energy needs. Even including non-utility sources in an allowance system is unworkable. These non-utility sources will pay their share through increased electric rates. Imposing

further emissions limitations would be unduly burdensome, inequitable and anticompetitive.

Finally, we strongly support repeal of the percentage reduction requirements of Section 111 of the Clean Air Act because it would encourage fuel flexibility and create incentives for clean coal technology development.

APPENDIX A**American Iron and Steel Institute (AISI)**

AISI is the principal trade association of the domestic steel industry. Its 53 member companies account for more than 80% of the raw steel production in the United States. Members of AISI consume large quantities of electricity constituting as much as 40% of a steel mill product.

American Paper Institute (API)

API is the national trade association of the pulp, paper and paperboard industry. Its 175 member companies account for over 90 percent of the industry's domestic manufacturing output. Half of the industry's energy source is from co-generated power.

American Textile Manufacturers Institute (ATMI)

ATMI is the central, non-profit trade association representing the domestic textile industry. Member companies operate in more than 30 states and represent approximately 85% of the capacity for spinning, weaving, tufting, finishing and dying of textile products in the United States.

Chemical Manufacturers Association (CMA)

CMA is a non-profit trade association of whose 170 member companies represent more than 90% of the productive capacity of basic industrial chemicals in the United States. The association brings together member company experts to help resolve industry-wide technical and scientific problems. It communicates with government and the public on vital issues and administers research, studies and tests on a wide range of chemical products and practices.

Council of Industrial Boiler Owners (CIBO)

CIBO is a broad based association of industrial boiler operators and related equipment manufacturers, with 65 members representing 19 major industrial sectors. CIBO was formed in 1978 to promote the maximum exchange of information between industry and government relating to energy and environmental policies, laws, and regulations affecting industrial boilers. CIBO has a long-standing interest in the development of reasonable, cost-effective regulations of industrial air emissions.

**National Environmental Development Association/Clean Air Act
Project (NEDA/CAAP)**

NEDA is a coalition of labor, agriculture and industry concerns dedicated to reconciling America's economic and environmental goals. Since 1979 NEDA/CAAP has worked to educate decisionmakers on the need to reconcile the Clean Air Act's regulatory tools with continued industrial growth and modernization -- while maintaining the Act's goals.

APPENDIX B

Relative Costs of SO₂ Control: Comparative Emissions

Although the contribution of industrial boilers is low, only 7.6%, the per ton cost of removal is high, 3.7 x that of the utilities.

<u>Comparative Emissions,</u> <u>million tons (short tons)¹</u>			<u>Removal cost, \$/ton²</u>		
<u>Mean</u>	<u>Amount</u>	<u>Percent</u>	<u>Range</u>		
Utility Boilers	16.2	72.0	Utility Boilers	380-590	435
Industrial Boilers	<u>1.7²</u>	<u>7.6</u>	Industrial Boilers	1200-2000	1600
Other	4.6	20.4	Difference		1135
Total	22.5	100.0			

1. Based on wet FGD systems.

2. This industrial boiler total of 1.7 million tons is less than the 1.8 millions tons emitted by the top five utility stations. (USEPA National Emissions Data System (NEDS), and DOE's Inventory of Power Plants in the U.S., EIA-0095 (85), 1985.)

APPENDIX C

Cost to States Whose
Industrial Boiler SO₂ Emission Rate
Exceeds 1.2 lbs/MMBtu/hr

<u>State</u>	<u>Tonnage To Be Reduced thousand</u>	<u>Cost, \$/ton¹</u>	<u>Total Cost, \$ million</u>
1) Illinois	58.2	1000	58.2
2) Iowa	36.4	1600	58.2
3) Tennessee	36.7	1000	36.7
4) Wisconsin	27.2	700	19.0
5) Indiana	23.9	700	16.7
 SUBTOTAL	 182.4T	 \$1035/T	 \$188.8
 6) Texas	 19.6	 700	 13.7
7) West Virginia	18.9	700	13.2
8) Georgia	14.3	700	10.0
9) Ohio	11.2	700	7.9
10) Mississippi	6.7	1000	6.7
11) Virginia	6.9	700	4.8
12) Kentucky	5.5	700	4.4
13) Montana	2.6	1600	4.2
14) Maine	4.0	700	2.8
15) Delaware	1.7	700	1.2
 TOTAL, 15 STATES	 273.8T	 \$ 943/T	 \$257.7

1. Depending on the percent removal required in the individual state, sources will use one of three methods to meet a 1.2 lbs/MMBtu standard:

Required Reduction (%)

Less than 30% (\$700)
30% to 50% (\$1000)
Greater than 50% (\$1600)

Least Cost Procedure

Fuel Switching
Combustion Modification
Scrubbing (FGD)

APPENDIX DProcess Emissions - SO₂

<u>Source Category</u>	<u>Number Source Types</u>	<u>Total Emissions</u>	<u>Percent Total</u>
A. Chemical	98	501,046	18
B. Food/Agricultural	33	3,329	--
C. Primary Metals	11	967,674	35
D. Mining Minerals	68	365,964	13
E. Petroleum	18	521,307	19
F. Forest Products	14	130,643	5
G. Rubber/Plastics	6	773	--
H. Fabricated Metals	15	258	--
I. Oil & Gas	4	267,844	10
J. Textiles	4	0	--
K. Solvents	34	822	--
Total	305	2,759,660	100
U.S. Total		21,070,651	13

BEFORE THE UNITED STATES SENATE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

STATEMENT OF JAMES M. FRIEDMAN
ON BEHALF OF
THE COALITION FOR ENVIRONMENTAL
ENERGY BALANCE

WASHINGTON D.C.
OCTOBER 4, 1989

My name is James M. Friedman. I am testifying on behalf of the Coalition for Environmental Energy Balance (CEEB). The Coalition has been in existence and studying the acid rain issue since 1981. Our goal has been to ensure a reasoned approach to legislation and regulations concerning acid rain. The Coalition has been primarily funded by contributions from Midwestern coal-fired utilities.

I. COMMENTS ON THESE HEARINGS.

The circumstances of today's hearing are characterized by haste. Senators Mitchell and Baucus held a press conference announcing their intent to introduce acid rain legislation on September 22, 1989, just 12 days ago. This hearing was scheduled approximately one week ago. As of last Friday evening (five days ago), the Mitchell/Baucus bill had not been introduced. This haste has made even cursory review of this legislation before this hearing an impossibility.

The timing of this hearing is hasty in a broader sense as well. The National Acid Precipitation Assessment Program ("NAPAP") state of the science/technology reports are due to be released in November. EPA Administrator William Reilly alluded to the upcoming release of these reports when he testified before this Subcommittee last week. Although any legislation enacted before the final assessment of NAPAP is released would be premature, these hearings would be more productive if the participants and the Senate had the benefit of reviewing these state of science/technology reports before testifying.

Even though many of those appearing before this Subcommittee today have spent much time dealing with acid rain over the past twelve years, there is a

basic lack of fairness in fasttracking such a complex and new piece of legislation through the legislative process. If we have learned anything over the past twelve years, it is that there are enormous difficulties associated with resolving the acid rain debate through any one piece of legislation. It takes a reasonable amount of time to understand the impact that any new proposal will have on each state, each region and the country.

Last week, Mr. Reilly told this Subcommittee that electricity sales increased a full 50% between 1970 and 1987. During that same period, sulfur dioxide emissions decreased 28%. In addition, this Subcommittee should be aware that from 1970 to 1982 coal consumption in the production of such electricity increased by 85%. Mr. Reilly's statement in conjunction with increased coal consumption is evidence of the fact that the electric utility industry is dramatically reducing SO2 emissions per unit of coal or electricity without changes to the current Clean Air Act.

These statistics also illustrate why an emissions cap in any legislation is unnecessary and is counterproductive to encouraging a thriving economy. An emissions cap is unnecessary since actual SO2 emissions reductions have been achieved without such a cap and despite a significant growth in demand. An emissions cap represents a zero growth philosophy. Mr. Reilly concluded from the 50% increased sales number that we must learn to conserve energy to stave off global warming. A more plausible conclusion is this increase reflects growth in the economy as a whole. The decrease in SO2 emissions reflects, in part, initiatives taken by the electric utility industry to reduce its SO2 emissions. The dramatic increase in coal use suggests that this country is learning to be more efficient in electricity production. Such efficiency should be rewarded and not punished. It is counterproductive to place onerous

compliance costs on an industry and at the same time attempt to cut back the demand for the services of the industry without expecting huge increases in the price of the industry's product or service.

II. SPECIFIC COMMENTS ON THE MITCHELL/BAUCUS PROPOSAL.

A. Mitchell/Baucus Will Not Provide Cost Effectiveness Or Flexibility.

It has been reported widely that the proposal will provide for cost-effectiveness by allowing utilities freedom of choice in determining how to meet emission reductions. The press release announcing the Mitchell/Baucus proposal states that both fuel switching and use of technology are available to meet Phase I reductions, "flexibility is preserved." Yet this proposal makes the emission reduction requirements in Phase I and Phase II part of each State Implementation Plan and, therefore, subject to Section 125 of the Clean Air Act (42 U.S.C. Section 7425).

For those who are not familiar with this provision, Section 125 authorizes each state to force sources to burn "local coal" which in most Midwestern states means high sulfur coal. You are well aware that only scrubbers can be used to bring high sulfur coal within the limits imposed by any acid rain bill. Therefore, Midwestern utilities may very well have the flexibility removed from their decision making through Section 125 and this Subcommittee should weigh the costs of this bill under such a scenario.

It would be altogether appropriate that Mitchell/Baucus include a repeal of Section 125. Like the percentage reduction requirement, Section 125 inherently forces scrubbers upon unwilling sources. It can only be misleading for the sponsors and this Subcommittee to discuss Mitchell/Baucus as "cost-

effective" and "flexible" while retaining the spectre of Section 125 mandatory scrubbing over the targeted plants.

B. Targeting 20 Plants Is Not A Cost-Effective Method Of Reducing SO2 Emissions.

The Mitchell/Baucus list of 20 plants subject to Phase I emission limitations is substantially the same list of target plants for the Administration's amendments to the Clean Air Act that appeared in the June 2, 1989 issue of "Inside EPA." In fact, plants are listed in the same order on both lists. A draft copy of a Domestic Policy Council options paper reportedly suggested that it would be "politically more palatable" to hit a few states very hard instead of a number of states moderately hard. The Administration elected not to place the onerous burden of the bulk of SO2 reductions on these twenty sources. The sponsors of this proposal have offered no rational basis for this adoption of a rejected control scheme.

Although at first glance it may appear fair, cost-effective and efficient to target twenty utility plants, this is not the case. The principle of cost-effectiveness means that any national program to cut emissions by millions of tons of SO2 and millions of tons of NOX should do so in a way that imposes the least cost on the nation as a whole. It may cost less to clean one large power plant in the Midwest or Southeast than to clean several smaller industrial process facilities in Texas or New York that collectively emit the same amount of SO2 or NOX. However, the principle of fairness demands that clean up responsibility be shared by those responsible. Those consumers and industries in a few states should not bear the cost of cleaning up both their own and someone else's portion.

There are other large non-utility and utility sources that emit significant amounts of SO₂ that are not covered by this proposal, even in Phase II. According to numbers from the Energy and Power Subcommittee, House Energy and Commerce Committee reported in the June 12, 1989 edition of The Akron Beacon Journal, Texas is the sixth largest emitter of SO₂ but most of its emissions come from non-utility sources. Out of the ten states with the highest SO₂ emissions from all sources, three do not have plants listed on the target list: Texas, Kentucky and Florida, ranked six, eight and ten respectively. To force the bulk of emission reductions on only twenty sources in the Midwest is coercive and punitive, not efficient. Acid rain is a national problem and those sources of SO₂ that are allowed to avoid bearing any responsibility in addressing that problem receive a benefit by not having to bear some of the costs. Consequently, the Mitchell/Baucus approach is patently unfair.

The proposal also penalizes economic efficiency, in the form or gross size, by its use of a target twenty list. Under the theory of this proposal, if one utility has four units at one plant (located in one place for efficiency and economies of scale) and a second has units of equal size at four separate locations, the second will be able to emit more SO₂ than the first, more efficient utility. The second source, with units at separate locations, may be emitting a greater cumulative total of SO₂, yet this second source would not be targeted for emission reductions. Although the proposed bill is supposed to reward efficiency in energy production, the efficient utility in this instance would be subject to more stringent requirements.

C. The Mitchell/Baucus Bill Unfairly Burdens The Midwest With Implementing And Bearing The Costs Of SO2 Emission Reductions.

By focusing on utility emissions, and specifically the targeted twenty, the Mitchell/Baucus bill is biased against the Midwest. There is no scientific reason to limit SO2 emission reductions to the Midwest. There is strong scientific support for regulating sources closer to ecologically sensitive areas. In part this means regulating non-utility sources in New York, New England and elsewhere. There is an unchallenged scientific basis for the fact that the further away a source is located from the sensitive areas the less impact the source has on the area. Where, then, is the scientific justification for regulating twenty plants so much further from ecologically sensitive areas of upstate New York and New England than the exempt sources that are close to these areas?

There can only be politically expedient reasons to narrow the regulated to a few faraway sources. Limiting the number of regulated plants to one geographical area is justified only because it assists the passage of legislation without regard to the fairness or effectiveness of the proposed legislative solution. The end result of this approach will be divisiveness among regions and inefficient, expensive and wrong results.

A number of complaints have been made about the disproportionate share of reductions nine states will have to bear under the Administration's proposed legislation. Under that proposal, nine states will bear 67% of the reductions while they contribute 50% of total U.S. SO2 emissions. The Mitchell/Baucus bill exacerbates that disparity by putting the burden of meeting SO2 emission reductions on just twenty sources by probably the costliest method which has its own environmental problems.

III. GENERAL COMMENTS ON NAPAP, TONNAGE REDUCTION AMOUNT AND FAIRNESS.

A. Congress Should Wait To Enact Acid Rain Legislation Until The Final Assessment Of The National Acid Precipitation Assessment Program Is Issued And Considered.

Mr. Reilly suggested last week that we may hear from NAPAP in the next several weeks. These reports are state of science/technology reports on critical issues of importance in designing any control strategy. This Subcommittee should act with deliberation, not haste, and should wait for the results of NAPAP's final assessment. Enactment of acid rain legislation before such reports are released and digested would be premature. National policy on acid rain should be based upon a sound scientific demonstration that additional controls are necessary to address real environmental problems and that such controls will solve those problems in a cost-effective manner. The current scientific evidence demonstrates that there is no impending acid rain crisis which requires immediate passage of legislation.

There is no acid rain crisis that requires Congress to act with haste or to act prior to the release of NAPAP findings. Credible scientific evidence demonstrates that such acidification as has occurred was caused by prior, higher levels of emissions and that concentrations at current levels are not causing material environmental damage. This was demonstrated once again in the Electric Power Research Institute (EPRI) environmental briefing paper issued in July, 1989, entitled "Acid Rain Research Results." EPRI's report concludes, in part, that documented evidence of ecological damage from acidic deposition is limited to a very small group of potentially susceptible lakes. Other ecological effects are possible, but the scientific evidence on those effects is, at best, equivocal. Decisions about acid deposition policy are

difficult because of remaining scientific uncertainties and differing value judgments. It is only political expediency that would drive this Congress to select a control strategy before the scientific support is available.

Acid rain, ozone, global warming and air toxic issues are scientific problems with scientific solutions. The National Acid Precipitation Assessment Program's final assessment will provide such a scientific foundation for the acid rain issue and will be available soon enough to be considered in the final determination of policy. Congress should not stop short when the nation is so close to obtaining the scientific foundation (at a cost of a decade's effort and almost \$400 million) necessary for sound legislation. NAPAP has the responsibility, directed by Congress, to prepare a comprehensive scientific assessment of acid rain issues to assist Congress in developing sensible, effective and efficient policies to control the effects of acid deposition. If the Mitchell/Baucus bill is enacted, the funding and efforts of NAPAP will have been wasted.

B. Congress Should Base The Targeted Amount Of SO₂ Emission Reduction, If Any, Upon Scientific And Not Political Grounds.

The Subcommittee should analyze why the Mitchell/Baucus proposal has targeted a 10 million tons reduction amount. Where does this figure come from and why is it the magic number? What is the ecological difference between a 10 million ton reduction, an 8 million ton reduction, and a 12 million ton reduction? Mr. Reilly responded last week that the consequence of requiring a 12 million ton reduction (as compared to 10 million tons) is to double the cost of acid rain legislation. Likewise, using a 10 million tons reduction amount doubles the cost of acid rain legislation as the ELCON testimony given recently before the House Subcommittee on Energy and Power indicated.

Mr. Reilly stated that the doubling of cost between 10 and 12 million tons was "an unreasonable additional increment to cost". That same rationale can apply to the doubling of costs between 8 and 10 million ton reduction targets.

Based upon my research, it appears that the 10 million ton magic number is based upon the "50% reduction" recommendation in a 1981 National Academy of Science (NAS) study entitled "Atmosphere-Biosphere Interactions: Toward a Better Understanding of the Ecological Consequences of Fossil Fuel Combustion." The 10 million ton figure is of historical interest only and is not supported by science. Two years later the NAS, in "Acid Deposition: Atomospheric Processes in Eastern North America" attempted to put the lid back on Pandora's box in terms of this 10 million ton reduction number. The preface discussed the 1981 report:

... One chapter in the report described in detail the state of knowledge concerning the effects of acid precipitation on the biosphere. Based on its survey of field data in sensitive areas and the results of experiments, the report concluded that with respect to sensitive freshwater ecosystems, "It is desirable to have precipitation with pH values no lower than 4.6 to 4.7 throughout such areas, the value at which rates of degradation are detectable by current survey methods In the most seriously affected areas (average precipitation pH of 4.1 to 4.2), this would mean a reduction of 50 percent in deposited hydrogen ions." However, a change in pH, which is measured on a logarithmic scale, from 4.1 to 4.6 corresponds to a threefold decrease in deposited hydrogen ions rather than a twofold decrease.

The conclusion was misinterpreted in the press and by others (see, for example, Science 214:38 October 2, 1981, and page A26 of The Washington Post for October 16, 1981) as a recommendation for a 50 percent reduction in emissions of the pollutant gases, sulfur dioxide and the oxides of nitrogen, that are precursors to acid precipitation. While the report concluded that the desired reduction in the deposition of hydrogen ions implies a reduction in emissions, it did not indicate how much additional control of emissions would be required to meet the goal. [Emphasis added]

Unfortunately, this disclaimer was not heeded because "50% reduction" and "10 million tons" buzzwords gained a political life of their own. Instead, the

50% reduction figure has been heralded as the "necessary" reduction amount. This Subcommittee should not be held hostage to a figure that has no basis in scientific reality. As Mr. Reilly has already pointed out, we have achieved a 28% reduction in emissions from 1970 levels. Before imposing the onerous costs of this bill on an area of the country that has invested significant amounts of money in pollution controls already, the Subcommittee should reevaluate this 10 million ton reduction target.

C. Acid Rain Legislation Must Be Fair To The Regulated, To The Country And To All Ratepayers.

Senator Baucus has indicated that his proposal will take past contributions into effect by repealing the percentage reduction requirement. Mr. Reilly indicated in his testimony last week that repealing the percentage reduction requirement would not be detrimental so long as the emissions cap remains a part of any acid rain legislation. The reasoning behind suggesting such a repeal is basic fairness, giving credit where credit is due.

Similarly, to be completely fair, credit also should be given to each utility's past efforts to reduce SO₂ emissions. A number of midwestern utilities have reduced their emissions dramatically since the percentage reduction requirement was introduced into the Clean Air Act in 1977. If credit is given to other regions for their past contributions to limiting SO₂ emissions, credit should be given to the Midwest without regard to how the reduction was accomplished. Ohio does not meet the Mitchell/Baucus requirement that over 50% of a state's coal-fired capacity utilizes scrubber technology. Yet Ohio utilities have spent \$2.1 billion on air pollution control through 1987, more than any other state. Ohio utilities have invested in nuclear units which emit no SO₂ and for which credit should be given. Ohio

has reduced its SO₂ emissions by approximately 20% since 1975. If the Mitchell/Baucus bill limits past recognition to implementation of scrubber technology while penalizing others who secured emission reductions via other methods, it is misleading in its assertion of allowing flexibility and the use of alternatives.

National policy developed in response to acid deposition issues must be fair. To some, one of the main benefits of the Mitchell/Baucus proposal is the lack of a cost-sharing plan. Every region but the Midwest, the heartland of this nation, has been given substantial effective federal subsidies in one form or another. The S&L bailout, which has by and large benefitted a limited region, subsidization of hydroelectric projects, including several in Montana, are only two such examples of past federal assistance. Out of Montana's 23 hydroelectric plants, five are federally owned and supply electricity to residential customers: Libby Dam, Fort Peck Dam, Canyon Ferry Dam, Yellow Tail Dam and Hungry Horse Dam. Parts of the Midwest, Ohio for example, have received modest amounts of federal funds to develop clean coal technology. But those funds, like the funds expended on NAPAP, will be wasted if the Mitchell/Baucus proposal is enacted.

Census data lists the amount of federal assistance states receive compared to their population. The following numbers are for fiscal year 1988. The population of Maine represents 0.5 percent of the population of the nation and it received, in 1987, 0.6 of total federal funds given to states. Montana has 0.3 percent of the nation's population residing within its borders and received 0.5 percent of federal funds distributed to states in the same year. On the other hand, 4.4 percent of the nation's population lives in Ohio. Yet Ohio received only 3.8 percent of these federal monies in 1987. Similarly,

4.6 percent of the population lives in Illinois, while that state receives 4.1 percent of federal expenditure. Indiana has 2.2 percent of the population residing within its borders and receives 1.7 percent of federal expenditure.

Source: Bureau of the Census, U.S. Department of Commerce, March, 1989.

Ohio, Indiana and Illinois are already subsidizing Maine and Montana.

<u>For 1987</u>	<u>Maine</u>	<u>Ohio</u>	<u>Montana</u>	<u>Indiana</u>	<u>Illinois</u>
Federal Funds Per Capita	\$3,461	\$ 2,894	\$3,569	\$2,656	\$ 2,672
Federal Individual Income Tax Per Capita	\$1,269	\$ 1,426	\$ 958	\$1,380	\$ 1,748

Source: Statistical Abstract of the United States 1989 U.S. Department of Commerce Bureau of Census, January 1989.

The Midwest should not be made to absorb the costs, with the resulting ripple effects that this legislation will have on the Midwest's economy. One cost that is often overlooked in this debate when the argument is made that job loss in one area of the country is negated by job creation in another area of the country is the human cost of this dislocation. Tens of thousands of jobs will be lost in the Midwest - not only coal miners jobs but also industrial jobs in industries where utility rates are a major manufacturing cost, plus all of the affiliated service industry jobs. Richard Trumka, President of the United Mine Workers of America, told the House Committee on Energy and Commerce, Energy and Power Subcommittee on September 7, 1989, that the President's bill would result in massive economic disruption and dislocation in the country's high sulfur coal mining regions, resulting in a loss of over 30,000 coal mining jobs.

Mr. Reilly has testified that the Midwest's electric rates are now lower than the national average and will remain so if the President's bill is enacted. Regionally he may be correct. But since the Mitchell/Baucus bill is focused upon specific targets, specific rate impacts should be analyzed. To assist the Subcommittee to do so Appendix A of this testimony lists the average monthly residential electricity bill in certain affected states. In a letter sent to Mr. Reilly, Governor Celeste of Ohio said that based on U.S. Doe Energy Information Service Ohio rates range between 12th and 17th highest compared to rates in the 50 States and the District of Columbia. The statistics belie the claim that the Midwest can "afford" the costs of acid rain controls due to lower electricity rates.

IV. CLOSING REMARKS

I formally request that the Subcommittee allow me to supplement my testimony after the introduction of the specific legislation proposed by senators Mitchell and Baucus. I thank the Subcommittee for giving me this opportunity to express the concerns of those in the region that will be most directly affected by the course this Subcommittee is considering.

Appendix A

Typical Monthly Residential Electric Bills
 Based on January 1, 1988 Rates
 EIA Energy Information Administration

<u>City</u>	<u>Rate for 750 KWH</u>
Bangor City, Maine	\$ 71.43, Winter cycle 62.12, Summer cycle
Augusta City, Maine	59.01, Annualized
Kennebunk, Maine	51.23, Annualized
Billings, Montana	43.76, Winter cycle 34.29, Summer cycle
Helena, Montana	43.76, Winter cycle 34.29, Summer cycle
Butte, Montana	43.76, Winter cycle 34.29, Summer cycle
Rochester, New York	65.17, Annualized
Syracuse, New York	56.62, Annualized
Albany, New York	56.62, Annualized
Cleveland, Ohio	67.91, Winter cycle 81.30, Summer cycle
Columbus, Ohio	57.93, Winter cycle 57.93, Summer cycle
Akron, Ohio	66.05, Annualized
Toledo, Ohio	73.01, Winter cycle 81.32, Summer cycle
Chicago, Illinois	47.52, Winter cycle 73.24, Summer cycle
Oak Park, Illinois	53.32, Winter cycle 79.06, Summer cycle
Springfield, Illinois	38.34, Winter cycle 44.49, Summer cycle
Bloomington, Indiana	61.00, Annualized
Indianapolis, Indiana	51.07, Annualized
Whiting City, Indiana	76.60, Annualized
South Burlington, Vermont	65.36, Winter cycle 48.61, Summer cycle
White River Junction, Vermont	65.36, Winter cycle 47.29, Summer cycle

Hanover, New Hampshire	50.17, Annualized
Dover, New Hampshire	69.62, Annualized
Clarmont City, New Hampshire	72.74, Annualized
Boston, Massachusetts	75.11, Winter cycle
	84.47, Summer cycle
Lenox, Massachusetts	53.16, Annualized
Pittsfield City, Massachusetts	64.06, Annualized
Wellesley, Massachusetts	52.31, Annualized
Worcester, Massachusetts	53.16, Annualized

WRITTEN RESPONSE OF JAMES M. FRIEDMAN
TO QUESTIONS SUBMITTED BY SENATOR LEIBERMAN
FOLLOWING MR. FRIEDMAN'S TESTIMONY BEFORE THE
UNITED STATES SENATE SUBCOMMITTEE ON ENVIRONMENTAL
PROTECTION OF THE COMMITTEE ON ENVIRONMENT AND
PUBLIC WORKS ON OCTOBER 4, 1989

Question 1: Do you have any studies which indicate what percent of New England's acid rain problem is caused by facilities located within New England?

Response: No. I believe that any studies which attempt to allocate causation of acid rain problems by facility or geographic region contain such a large margin of error as to be meaningless for allocating emission reductions. For several years, environmental groups and the Canadian government have attempted to use meteorological models to project such allocations. These attempts have routinely ended in failure. The consensus of scientists in this field is that the RADM model, being developed by NAPAP, will provide the best "rough guess" of the allocation process.

With that caveat in mind, I do note the following:

1. The Studies of Dr. James A. Fay of the Massachusetts Institute of Technology have postulated that expensive regulation of sources of acidic deposition will result in negligible reductions in the ph levels of rainfall in the Northeast. If you are not familiar with the work of Dr. Fay, I will be happy to supply you with citations to his work.
2. The National Academy of Sciences in "Acid Deposition: Atmospheric Processes in Eastern North America" states on page 10, "[i]t can be stated as a rule of thumb that the farther a source is from a given receptor site, the smaller its influence on that site will be per unit mass emitted."

The thrust of my testimony is that it makes no scientific sense to exempt sources of SO₂ near the ecologically sensitive areas from regulation, while placing the entire burden of reducing emissions on sources hundreds of miles away. Exempting non-utility sources in New York and New England from regulation unfairly exacerbates the burden that must be shouldered by utility sources in the Midwest to achieve the same environmental impact.

Question 2: Is your testimony that regulating sources in the Midwest will not help New England's acid rain problem?

Response: No. My testimony is that we do not know enough about source-receptor relationships to impose onerous compliance costs on one region of the country for speculative, long-term benefits in another region, while at the same time exempting sources nearby in New England and New York from regulations. When I testified on October 4, 1989, I suggested to the members of the Subcommittee that they listen to Dr. Mahoney's testimony about NAPAP's findings. On October 5th, Dr. Mahoney said that 5% of the lakes in the Northeast, eleven percent in the Adirondocks, were acidic. In his testimony Dr. Mahoney was, based upon the best scientific data, unable to specify the percentage that owed their acidic nature to man-made emissions. He also stated that the acidity situation in the Northeast is in a steady state. With current emission levels, the acidity of New England's lakes will not increase. A thirty percent reduction in sulfur dioxide emissions will lead to a recovery of half of the lakes presently acidic within fifty years. Only twenty-five percent of these recoverable lakes will show improvement over the next ten to twenty years. We do not know all of the answers yet, but a reasonable conclusion to draw from the information we have is that any proposed onerous regulation of the Midwest will result in negligible benefits in New England, and then only in the distant future.

Question 3: What is your basis for your contention that regulating sources closer to ecologically [sic] areas will address the acid rain problem?

Response: I direct the Subcommittee's attention once again to the "rule of thumb" published by the National Academy of Sciences discussed in my response to the first question. Additionally, Dr. Mahoney's October 5th testimony indicates that the source-receptor relationship still is not understood sufficiently. Until NAPAP, and the Congress, has a better understanding of what sources are responsible for the acid rain problem, it is unfair to make one region bear the enormous costs of compliance to accomplish perhaps negligible benefits in another region fifty years from now. Dr. Mahoney's testimony supports my conclusion that we should wait until NAPAP is released to enact registration. On page 11 of Dr. Mahoney's written testimony he states that "chemical responses in the Northeast will begin to occur within one decade after emissions are reduced. Chemical responses in the mid-Atlantic and Southern Blue Ridge Regions ... will take several decades." We can afford to wait twelve months without risking permanent environmental damage.

Question 4: If acid rain were caused primarily by local sources, isn't it true that the states could have regulated the problem a long time ago and that none of the regional conflict which has dominated the debate would have occurred?

Response: History has trapped those in the acid rain debate from reassessing the claims made in their relative youth about 10 years ago.

In the early years of this decade, the claims made by Canadians and others about acid rain in North America, did have the appearance of being new and compelling evidence. The scientific imperative for new legislation, as articulated at that time, was as follows: the pH of rainfall was becoming more acidic; a significant number of lakes and streams were in danger of losing, or had lost, their fish populations; there were large sources of SO₂ emissions in the American Midwest; these sources of SO₂ were upwind of the areas of alleged damage; it was expected that the Reagan administration would relax the SIP's of these midwestern states, thereby allowing even larger amounts of SO₂ to float downwind. The little environmental damage which could be related to acidification was viewed as a harbinger of the ecological disaster to come. The cost of controlling SO₂ emissions sufficiently to prevent further damage was estimated to be a two percent increase in electricity rates.

This scenario had all of the attributes of a reasonable claim. The risks were high, the probability of success was high, and the costs were low. The claim was so reasonable that Congress immediately enacted the Acid Precipitation Act of 1980, which committed the federal government to a coordinated 10 year plan of study into the causes, effects and possible solutions to acid rain so that legislation would be based on sound scientific ground. Ironically, the scientific evidence which emerged since the early 1980's, in part by this federal research, has demonstrated that the early allegations about acid rain in North America were inaccurate. (emphasis added) The pH of rainfall was not becoming worse. Several studies by the U.S. Geological Survey demonstrated that the pH levels of rainfall in the northeastern United States were improving, not worsening. These studies have been confirmed by the NAPAP research, moreover, much of the research which purported to demonstrate the rapid drop in pH levels did not survive peer review. Even environmentalists warned against comparing recent pH tests with older pH sampling because of the differing biases of the testing techniques.

The importance of the upwind location of the midwestern sources was challenged when damage caused by acid rain was alleged to exist in the southeastern United States and in California on the west coast. Since the prevailing winds do not send midwestern emissions to these disparate parts of the country, other explanations for this alleged damage needed to be found. The existence of the alternative theories, which concentrated mainly

on local emissions or on nitrogen oxides and other pollutants, reduced the possibility that a significant reduction in midwestern SO₂ emissions would have a significant beneficial impact on the pH of rainfall in the northeastern United States and Canada. The logical principle of Ockham's Razor requires scientists to search for consistent explanations, not case-by-case guesswork.

The scare about massive increases in SO₂ emissions under the Reagan Administration proved to be equally as false. Midwestern SO₂ emissions continued the decline commenced in the late 1970's under the Carter Administration. This point is demonstrated by examining the change in electric utility SO₂ emissions from 1975-1985.

TABLE 1

<u>STATE</u>	<u>PERCENT REDUCTION</u>
Illinois	-27.9%
Kentucky	-37.6%
Michigan	-60.2%
Ohio	-20.2%
West Virginia	-12.2%

The studies which projected minimal cost increases for an acid rain program were re-examined and found to contain unwarranted economic and political assumptions. Numerous economic studies were completed using what are recognized now to be more realistic assumptions. These studies placed the cost of acid rain legislation preferred by Canada and environmental groups at \$3 billion to \$7 billion (U.S.) per year for at least 25 years. The cumulative cost is projected to be at least \$100 billion (U.S.). Electricity increases in the midwestern states targeted for large emission reductions would range from 8% to 20%. Increases for individual electric utilities could range significantly higher.

What has emerged after ten years of research and analysis into the North American acid rain situation is a scenario far different from the one articulated by the Canadian government in 1980. The pH of rainfall is improving; there is no massive acid rain related damage; the sources of SO₂ in the Midwest are decreasing their emissions and, in any event, they are not as important as local sources of SO₂ and other pollutants; the effectiveness of the proposed remedy has become highly doubtful; and it is apparent that the cost of the program would be over \$100 billion. In summary, the risks of acid rain in North America are not as high as perceived before, certainly, the immediate risks of maintaining the status quo are low; the possibility of success of the proposed measures is low and the costs would be high. In light of the emerging scientific evidence, the proposed legislation has lost its aura of reasonableness.

One reason that states may have balked so far in legislating their own solution to the acid deposition issue is that they recognize it will take a national effort to resolve the complex political, scientific and economic problems associated with the acid rain debate. There are enormous costs associated with resolving the acid deposition issue and our scientific understanding is such that we do not clearly understand if the benefits that will result from the expenditure in controlling the problem outweigh the costs. We understand the enormous costs associated with the problem. The NAPAP Final Assessment will help to assess how to best resolve this issue. Ten years ago, Congress determined that acid deposition was of a sufficient national character to appropriate \$500,000,000.00 to engage in a comprehensive study of the acid deposition issue. I cannot speculate beyond this why individual states have not sufficiently regulated this problem.

Question 5: Are you aware that EPA recently conducted a study of lakes in the Northeast and concluded that reductions in SO₂ emissions could improve the health of lakes damaged by acid rain?

Response: The testimony of Dr. Mahoney indicates that emission reductions in the amount of ten million short tons below 1980 levels would benefit aquatic resources and mitigate other environmental effects caused by acidic deposition and its precursors. Dr. Mahoney went on to say that in the Northeast, EPA models project that a 30% reduction in deposition will result in approximately half of the affected lakes currently acidic becoming non-acidic. In a footnote, that statement is explained and indicates that there are currently only 162 such affected lakes and that approximately 75 of these will become non-acidic after 50 years. In twenty years only twenty-five lakes will be non-acidic. The projected cost of this legislation is \$80-120 billion dollars. This is equivalent to spending five billion dollars on each lake. The twenty year cost of liming an average lake is less than \$50,000. Only 5% of lakes in the Northeast are acidic. Dr. Mahoney also acknowledged later in his testimony that determining the precise percentage of acidic waters due wholly, or in part, to acidic deposition carries with it scientific and statistical uncertainties.

Dr. Mahoney indicated that at current emission rates, 10% of the streams in the Southeast will become acidic over the next 50 years. One conclusion we can draw from Dr. Mahoney's statement about the acidity of Southeastern streams is that we have more than enough time to postpone the imposition of phase I or phase II deadlines to facilitate the development of clean coal technology (and thus dramatically lower compliance costs to consumers) and to at the very least wait until next year when NAPAP will issue its

Final Assessment to legislate more effectively and wisely. A second conclusion is that we should examine whether emission reduction in the Midwest will have a significant or appreciable effect on the acidity of Southeastern streams, given the prevailing winds in North America.

Question 6: Do you disagree with the Deputy EPA Administrator's statement that "The scientific data reinforce President Bush's proposal to reduce annual sulfur dioxide emissions by ten million tons?"

Response: Yes.



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Written Statement
of
Governor George Sinner, State of North Dakota
before
Environmental Protection Subcommittee
of
Senate Environment & Public Works Committee

October 12, 1989

Introduction

On behalf of the State of North Dakota, I am happy to have an opportunity to submit a written statement before the hearing record closes on some concerns North Dakota has with the Mitchell/Baucus acid rain proposal.

First, let me say I appreciate your efforts to address the acid rain problem and to develop legislation that responds to the unique problems of the various states. It's a very complex issue with competing interests that have much at stake. Hopefully, final legislation that emerges will recognize that environmental policy cannot exclude energy interests nor can energy development occur to the exclusion of environmental concerns. A balance of all interests is necessary if we are to have reliable, clean sources of energy, stable economies, and the ability to compete on a level playing field.

North Dakota's Major Concerns

Generally speaking, it is obvious that many states have badly fouled their air. Many states have innumerable sources of pollution that endanger the health of huge numbers of people and destroy the ecosystem as well. That is not true of North Dakota and many other low-pollution states. As the 11th largest coal-producing state in the nation, North Dakota's first specific concern relates to the impacts clean air legislation may have on its existing lignite operations. Our state's fragile agricultural and energy economy cannot afford to suffer any lost production, lost jobs, lost business volume, or lost tax revenue as a result of adverse clean air legislation.

Secondly, with 33 billion tons of recoverable lignite resources and a 1,000 year supply of coal at today's rate of production, North Dakota is concerned about any attempts to limit future growth and prevent the development of our vast resources. And finally, as one of the three states in the nation to meet all federal clean air standards and as one of the top four states in the nation in terms of generation capacity scrubbed, we are concerned that federal legislation not punish the efforts already made by clean states through a biased, simplistic industry-specific attack.

If I may, let me provide you with specific amendments for your consideration.

Credits for Clean State (SO₂)

We believe your credit for clean state provision is a modest improvement over the Administration bill and we appreciate your efforts to recognize the pollution control efforts clean states have already made. In North Dakota's case, seventy-two (72) percent of our capacity is scrubbed and we have spent \$700 million on pollution control equipment, with about half of that directly attributed to SO₂ removal. However, as 406(a) of the Mitchell/Baucus proposal is presently drafted, only three of our state's eleven affected units would qualify for the clean state provision. Thus, it is imperative that language requiring individual units to achieve a "70 percent reduction" in SO₂ be eliminated. If this is not done, the good intentions of recognizing clean states like North Dakota will not occur and selfish monetary interests will have their day regardless of a state's history of polluting or remaining clean. (See suggested amendment in Exhibit 1)

Credits for Clean States (NOX)

We also believe clean states like North Dakota should have flexibility in addressing NOX concerns. Although your proposed provisions for cyclone boilers provide the flexibility necessary to continue operations, we urge you to also allow clean states with tangentially-fired boilers and wall-fired boilers to operate at the 1985 rate. If this is not done, in North Dakota's case, our best estimate is that your Section 407 NOX standards will cost about \$15 million in new capital costs and about \$2 million more in annual operating costs for our units with tangentially-fired and wall-fired boilers. (See suggested language in Exhibit 1)

Growth for Clean States

At the outset, let me emphasize that I am philosophically opposed to emission caps for any units in our state because caps do not address the issue of the significant contamination in states that have developed their jobs and industries regardless of the environmental consequences while those who developed carefully are punished.

In addition, if new units in North Dakota can only be built by retrofitting an older unit with scrubbers, buying an emission offset, or trading, I doubt that there will be any further lignite development, resulting in a even greater consumption of severely limited petroleum-based fuels.

At an absolute minimum, at least give North Dakota the opportunity to grow at a level that recognizes the pollution control efforts which units in North Dakota have made below the 1.2 lbs/mm Btus (See new subsection 406(e)).

Gascoyne/Big Stone Amendment

In order to protect existing jobs and economic activity in North Dakota, we are also proposing that low emission states like South Dakota with a single emission source be provided an extension of time to comply with new standards (See proposed new section (f)).

Environmental Equity Amendment

Another amendment which is imperative in the Mitchell/Baucus proposal is an "environmental equity" amendment, which would require nations from which the U.S. imports energy to have the same air pollution control performance standards and compliance schedules as we have in this country.

It only seems fair that, if, for example, Canada is to export electricity to this country which directly competes with our fossil-fueled electrical generation, then they should have the same or similar performance standards that we have so that everyone competes on a level playing field.

Furthermore, effective environmental policy demands that we recognize that emissions cross national boundaries and contribute to potential acid rain problems regardless of their source. This is particularly troublesome since Canada does not have one scrubber on any of its fossil-fueled generation. (See proposed amendment in Exhibit 2)

Thank you for the opportunity to present North Dakota's views to the Committee.

EXHIBIT 11. Proposed North Dakota SO₂ Amendment

Eliminate Qualification of 70% reduction requirement in order to be clean state. If this is not done, North Dakota will not qualify as a clean state.

2. Proposed North Dakota NO_x Amendment (Add Section 407 to 406(a) and add new subsection 406(d))"CREDITS FOR CLEAN STATES"

"SEC. 406. (a) Units in States in which less than 150,000 tons of sulfur dioxide were emitted in 1985 and in which more than 50 percent of the coal-fired utility-generated electricity was produced in calendar year 1989 from boilers with a technological system of continuous emissions control that achieved, at a minimum, on an annual basis, a 70 percent reduction in sulfur dioxide emissions below uncontrolled emissions levels in calendar year 1988 shall not be considered affected units for purposes of sections 404 and 405, and 407.

"(b) After the date of enactment of the Acid Deposition Control Act of 1989, it shall be unlawful for units in such States to increase their emission rate from their calendar year 1985 levels.

"(c) After January 1, 2000, it shall be unlawful for units in States described in subsection (a) with an actual 1985 emission rate of more than 1.20 lbs/mmBtu to emit sulfur dioxide in excess of the tonnage limitation provided in this sub-section. For purposes of this sub-section, the term "baseline" means the annual average quantity of mmBtu's consumed in fuel during calendar years 1996, 1997 and 1998. The sulfur dioxide emissions tonnage limitation for such units shall be the product of the unit's baseline emissions multiplied by the calendar year 1985 sulfur dioxide emission rate

(d) After January 1, 2000, it shall be unlawful for units in states described in subsection (a) to exceed an annual emission rate requirement for nitrogen oxide greater than its actual 1985 emission rate.

3. Proposed North Dakota Growth Amendment

(e) After January 1, 2000, such states described in subsection (a) may have additional emission allowances of sulfur dioxide from the total of all units with an actual 1985 emission rate of less than 1.20 lbs/mmBtu and all new coal-fired utility-generating units at no greater than the product of 1.20 lbs/mm Btu multiplied by the annual average quantity of mmBtu's consumed in fuel by such units during 1996, 1997 and 1998 divided by 2,000.

4. Proposed North Dakota Gascoyne/Big Stone Amendment

(f) Single Unit States -- After December 31, 2000, any state with total actual 1985 emissions of less than 50,000 tons of sulfur dioxide, and having over 70 percent of covered emissions from a single affected unit under Sections 404, 405, and 407 shall have the single affected unit comply with the standards established in Section 406(c) as of January 1, 2010, or on the date thirty-five years following the completion of the construction of the affected unit, whichever is earlier. Qualifying single affected units shall be required to file permit applications with authorized state permitting authorities under Section 408(d). Said permits shall make unlawful total actual annual emissions of sulfur dioxide in excess of 100,000 from single unit states.

EXHIBIT 2

Governor George Sinner
Environmental Equity Amendment
October 11, 1989

Sec. 415 Certification of Equivalent Programs

(a) As used in this section, the term --

(1) "Administrator" means the Administrator of the
Environmental Protection Agency;

(2) "fossil fuel" means any naturally occurring organic
fuel, including coal, crude oil, and natural gas;

(3) "import" means to land on, bring into, or introduce
into, any place subject to the jurisdiction of the United States,
whether or not such landing, bringing, or introduction
constitutes an importation within the meaning of the customs or
trade laws of the United States;

(4) "person" means an individual, corporation (including a
government corporation), partnership, firm, joint stock company,
trust, association, or any other entity, or any officer,
employee, agent, department, or instrumentality of the Federal
Government, of any State or political subdivision thereof
(including any interstate body), or of any foreign government
(including any international instrumentality);

(5) "Secretary" means The Secretary of State;

(b) Imports. -- After January 1, 2000 it shall be unlawful for
any person to import electricity or fossil fuel used for
electricity generation, unless the Administrator in consultation

with the Secretary has published a decision, after notice and opportunity for public comment, certifying that the nation from which such electricity or fossil fuel is imported has established and is fully implementing programs that require emissions reductions and controls on electric generating units and fossil fuel processing and transportation facilities on a schedule and in a manner that is at least as stringent as the compliance schedules for and limitations of emissions, including hazardous air pollutants, on domestic electric generating units and fossil fuel processing and transportation facilities.

(c) Certification of National Program. -- The Administrator shall not certify any national program under subsection (b) unless it is determined that--

(1) the nation has adopted legislation or regulations which give the emissions reductions and control schedules for each pollutant the force of law; and

(2) the legislation or regulations include performance standards, reporting requirements and enforcement provisions no less stringent than those specified in the Clean Air Act and the amendments made by subsequent enactments, and that the information contained in such reports is available to the Administrator and the Secretary upon request.

(d) Certification for Participation in the Allowance System. -- If the Administrator, in consultation with the Secretary,

determines that the certified program is consistent with the allowance allocation and transfer program and the permit and compliance program set forth under this title, the owner or operator of a steam-electric generating unit under the certified program may participate in the allowance allocation and transfer system under terms and conditions which the Administrator, in consultation with the Secretary, shall prescribe by regulation.

(e) Revocation. -- At least annually, the Administrator, in consultation with the Secretary, shall review each certification made under this section and shall revoke certification, after notice and opportunity for public comment, unless it is determined that the conditions of this section remain satisfied and that the applicable emissions reduction and control schedule for each pollutant is in fact being carried out in such nation. Revocation shall take effect one hundred eighty days after notice of the revocation has been published.



American Planning Association
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Phone 202 872 0611

STATEMENT BY
THE AMERICAN PLANNING ASSOCIATION
ON
THE CLEAN AIR ACT AMENDMENTS OF 1989, H.R. 3030

The American Planning Association is a non-partisan, nonprofit national organization whose members include public and private planners and elected and appointed officials at all levels of government, as well as educators, students and interested citizens. A commitment to the use of sound planning to improve our nation, its communities and regions as well as to conserve its resources and to preserve its environment unite our 24,000 members in 45 chapters which cover every state and Congressional district.

The American Planning Association has an adopted policy on environmental quality which seeks to protect renewable resources including air, preserve sites of special scenic quality, and integrate and implement environmental policies and programs into comprehensive and functional planning activities. Based on this policy, we will make a number of comments about H.R. 3030, the Clean Air Act Amendments of 1989, proposed by President Bush. These comments are organized in three parts: (1) urban air quality, (2) air toxics, and (3) acid rain.

URBAN AIR QUALITY

We applaud President Bush's goal of reducing emissions that cause smog by 45 percent by the year 2000. We want our cities and communities to have a safe and high quality environment including clean air. H.R. 3030 strives to accomplish this by relying on the current clean auto and industrial control programs, but there is no reason to believe that this goal can be met using current programs. It has been well documented that existing programs are inadequate (see Figure 1). Total emissions for carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOCs) and particulates are not declining although lead has shown a decrease since 1976. When correlated to vehicle miles traveled (see Figure 2), CO, NOx, VOC and particulates have declined slightly since 1976. Although new cars have better technology, the increased number of miles traveled and the increased number of cars being used causes the total emissions to remain constant.

Good comprehensive land use planning that is integrated with transportation planning is basic. We applaud the section of the bill requiring "coordination of air quality with the continuing cooperative and comprehensive transportation planning process." In practice, however, this "cooperation" needs to be strengthened.

One method proposed in the bill to bring about the reduction of emissions-causing smog is to impose tighter tailpipe standards on cars and light trucks for hydrocarbons and NOx. This proposal does not take advantage of current clean air technology. Eighty-five percent of today's cars already meet President Bush's proposed standards. The hydrocarbon controls are at the level currently in place in

California. Additionally, California requires a 100,000 mile warranty on emissions control equipment which is preferable to the Bush proposal of a 50,000 mile warranty and proves that stricter controls are feasible.

Light trucks, strangely enough, would be allowed more lenient standards than cars in H.R. 3030, despite the fact they have essentially the same engines. Although long overdue for the federal government to be concerned about trucks, the bill sets CO standards twenty-three percent weaker for light trucks than for cars. APA maintains that the CO standards should be the same for light trucks and for cars.

The standards for heavy vehicles do not go far enough. Pollution controls on buses, which were to take effect in 1991, will be rolled back. The timetables need to stay on track. We have seen from past experience that challenging emission standards is what is needed to encourage the development of new technology.

The bill uses alternative fuels as a strategy to clean up the air in nonattainment areas. The urban bus requirement seems very reasonable. Some buses in southern California have been running on methanol for years as part of an active demonstration program by the California Energy Commission and the South Coast Air Quality Management District. The Los Angeles Area Air Quality Management Plan calls for a complete change for all buses to alternative fuels.

Manufacturing and selling sufficient clean fuel should not be a technical problem, although it can be an economic one as oil companies do not want to see an estimated ten percent cut in sales volume of petroleum products. There will need to be incentives to get more motorists to use alternative fuels. In Denver and

Phoenix, there are people already committed to clean air who are willing to switch fuels. Nonetheless, there will be problems getting everyone to participate.

The segment of the Bush plan which allows manufacturers to receive emission credit for building clean fuel vehicles is similarly uncertain in the magnitude of its impact on cleaning the air. How can manufacturers insure motorists will buy these cleaner fuel vehicles; and if they do not, what is the penalty? Even more importantly, all these efforts are premised on our continuing reliance on the car for transportation. The root of the problem is more basic to the way our transportation system is built and its relationship to land use.

It is important, therefore, to try some other approaches, such as getting people to drive fewer miles and to use alternative forms of transportation. The basis for this approach will be to tie the development of transportation systems to land use and to provide safe and attractive alternatives to the car. Some examples are bicycling, walking, car pooling, and public transit that is accessible to all.

H.R. 3030 contains no provisions for reducing NOx from automobiles despite its contribution to acid rain and possible impact on ozone levels. Health studies show that ozone is a much more serious health problem than was thought when the current standard was established. It is also now clear that ozone is seriously detrimental to plant growth. If we do not vigorously tighten ozone standards, lower agricultural yields as well as urban plant stress may result. We need healthy vegetation, carefully placed and maintained in urban areas, in order to mitigate air pollutants and weather extremes. Overall, increased vegetation can lessen the effects of climate warming. This link between air pollution and global warming needs to be strongly and clearly articulated in any clean air legislative package.

Local and state officials need better guidelines and clearer reduction schedules. The longer deadlines to meet federal health standards of ozone are unreasonable and jeopardize the health of tens of millions of Americans. Cities should be required to meet the standards by the end of the century. Stronger sanctions and penalties will have to go along with goals or we will simply end up with more of the same delaying tactics that we have now. Penalties could include such items as disallowing building permits, denial of proposed water hook-ups, or suspension of federal transportation dollars. Sanctions need to be mandatory with penalties attached, not discretionary. Much of the current problem is directly due to inadequate consideration of air quality in the planning process and road systems that serve poorly located developments. Incentives are necessary to get cities to find alternatives to the private automobile.

While not strictly an urban issue, the impact of H.R. 3030 on the scenic quality of national parks and wilderness areas is cause for grave concern. The proposed exemption of strip mining particulates from air quality standards and the non-degradation principle is counter to a court decision ordering EPA to evaluate whether these emissions pose a threat to air quality around national parks. This court decision requiring EPA to set a NO_x limit and adopt regulations to protect national parks and wilderness areas from pollutants other than SO_x and NO_x should not be repealed.

AIR TOXICS

Toxic pollutants can cause cancer, birth defects, reproductive diseases, and can kill instantly if in high enough doses. The federal government needs to enact measures to reduce air toxics. Despite the deadly nature of these emissions, H.R. 3030 does little to control them. Most seriously, the bill repeals the requirement that public health be protected against cancer-causing chemicals in the air. Rather, the new "unreasonable risk" test allows analysis between cost, technology feasibility and human health with no consideration given to the natural environment. This is a serious flaw in methodology. Effects that cause deformities either in a single individual (teratogenic) or those passed on to future generations (mutagenic) should also be given equal status.

While cost-benefit studies are important, the problem is how to analyze the costs and benefits and their impact on future generations. It makes no sense for H.R. 3030 to allow less than the "best available technology" for new facilities because of cost factors. Some state laws already require "state of the art" controls for new sources, and this proposed law should not undercut those requirements. Major sources of polluting emissions — the chemical and petroleum industries — as well as smaller sources — dry cleaners, printers and paint shops — need increased controls.

It is a time for toughening regulations, not extending deadlines for clean-up by as much as 25 years. Further, the lack of any required plan or penalties to deal with accidental releases is a serious gap in the proposed law. From 1982 to 1987, accidental releases caused 309 deaths and 11,341 injuries according to data released in an EPA report. H.R. 3030 also contains no provisions regarding such natural areas as the Great Lakes which are seriously threatened by air toxics.

ACID RAIN

We applaud the effort of H.R. 3030 to take concrete action to reduce acid rain causing emissions. The Bush proposal has established a goal of achieving a 10 million ton reduction of SO₂ (sulfur dioxide) and a two million ton reduction of NO_x emissions. Half the reductions would be achieved by the year 1995. This proposal is the strongest aspect of the Bush bill. We support two important aspects of the SO₂ reduction proposal in particular: (1) utilities are free to choose whatever method they wish to achieve the reductions; and (2) utilities must pay the expenses incurred in reducing SO₂. The proposal, however, falls short of the twelve million ton SO₂ and four million ton NO_x reductions recommended by a variety of sources, including the National Academy of Sciences.

Since 1980 is set as a baseline, the 10 million ton reduction in SO₂ will actually only be nine million and the President's plan means there will be no net NO_x reduction. Pollution growth in the 1990s will offset this gain. Power plants and smelters will be allowed to use tall smokestacks and other techniques to disperse pollution, thus overturning court decisions that require pollution controls instead. National parks and wilderness areas will be adversely affected. The "tallstack" repeal could exacerbate the effects of high, short-term SO₂ exposure for asthmatics. Strong nondegradation language for the air quality of national parks, wilderness areas and other significant sites is a must for a clean air legislative package.

The emission trading plan, allowing the trading or selling of excess reductions in NO_x or SO₂ to companies or plants not achieving standards, has a host of unanswered potential problems: baseline measurements of NO_x are inadequate, SO₂ and NO_x are not equivalent so the impacts of reductions of the two are not comparable, and the two pollutants do not contribute uniformly to acid rain. From

a sound land use planning perspective, there are always difficulties in trading schemes because impacts are transferred from one location to another. Planning for the receiving end of the trade area ostensibly has been done by taking into account the maximum impact that the area can sustain. How, then, can more impact be added without sacrifice of the plan's goals and reasoned analysis?

CONCLUSION

In conclusion, the bill proposed by President Bush falls short of his promise to protect air quality and address the problem of acid rain. Western states as well as impacts to scenic and natural areas are largely ignored in the bill. Standards that were previously based on health benefits to the public are altered and proposed to be based on "unreasonable risk" which includes the difficult to perform cost-benefit analysis.

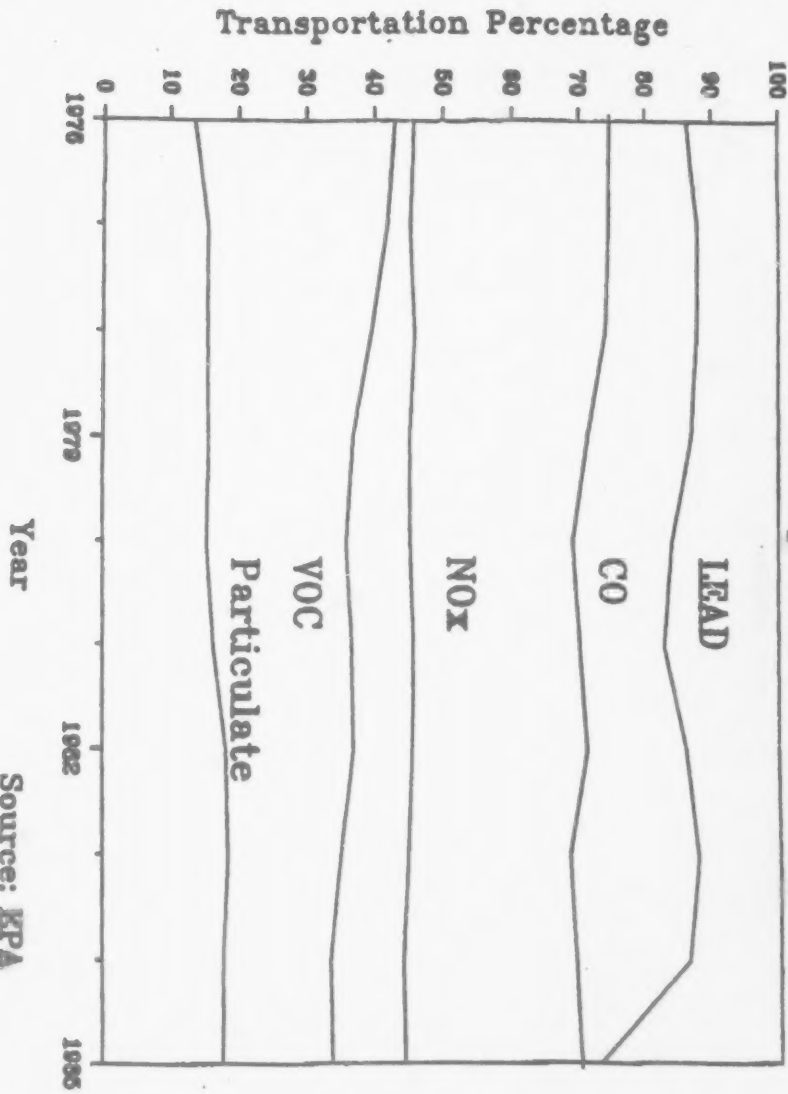
While it is difficult to estimate the damage that will continue to occur without tighter controls, it is clear that this proposal will allow urban smog and toxic air pollutant emissions to continue and even to increase. Deadlines established for achieving standards or preparing plans also increase the number of years that people are exposed to unhealthy air, particularly in urban areas. We need Clean Air Act Amendments that will encourage alternative transportation modes and require the best available technology to provide a healthy environment now for the people of the United States.

* * *

This APA position combines the work of members of APA's Environmental Planning Division: Division Chair Margot W. Garcia, PhD, AICP, Department of Urban Studies and Planning, Virginia Commonwealth University; and Division members Deanna Glosser, PhD, Department of Urban Studies and Planning, University of Illinois at Urbana; Judith McCandless, AIA, AICP, Louisville, KY; and Jo Anne Aplet, who is a planner in private practice in Los Angeles, CA.

FIGURE 1

National Emissions Inventory Trends of Transportation Contribution



Year

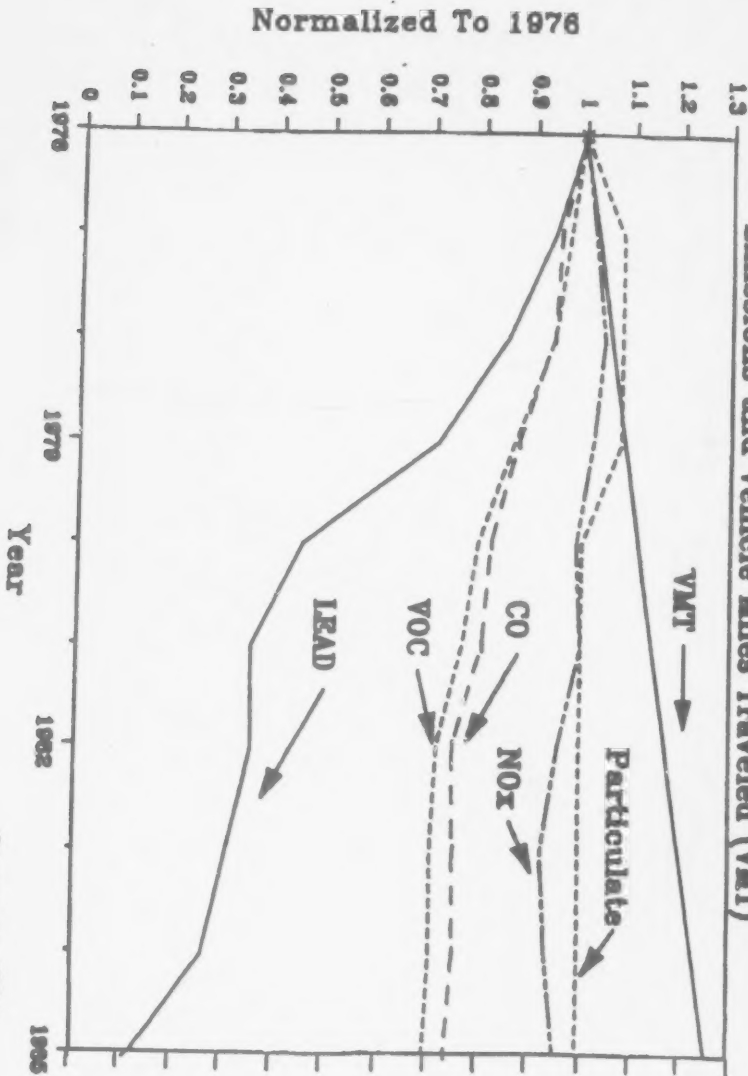
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FIGURE 2

National Transportation and Emissions Trends

Emissions and Vehicle Miles Traveled (VMT)





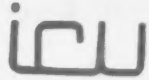
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A JOINT RESOLUTION

by the

AMERICAN PLANNING ASSOCIATION

and the

CANADIAN INSTITUTE OF PLANNERS

on

ACID RAIN

Adopted by APA, April 1989

Adopted by CIP, March 1989

WHEREAS

Acid deposition is an international problem that has damaged aquatic, soil and forest resources, buildings and cultural resources.

AND WHEREAS

The American Planning Association (APA) and the Canadian Institute of Planners (CIP) are deeply concerned about the lack of a comprehensive plan, to resolve the problem in both the USA and Canada.

NOW THEREFORE

APA and CIP urge the governments of USA and Canada to:

1. Formulate, adopt and provide for the implementation of complementary national programs to reduce emissions that cause acid deposition.
2. Require that the overall reduction from current levels of emissions be ten million tons of sulfur dioxide and four million tons of nitrogen oxide by 1995.
3. Provide that the reduction of emissions in each state, province and/or region be appropriate to that specific geographic area.
4. Recognize that some areas have already achieved significant reductions and that for such they should receive credit.
5. Permit specific jurisdictions to determine the most appropriate means by which the required reductions shall be met.
6. Appreciate the economic, financial and employment difficulties already encountered and likely to be faced by specific areas and provide funding to assist governments and agencies so that they will achieve the emission reductions required.

7. Acknowledge that any emission control program must be part of a comprehensive planning process that recognizes the interdependence of man's activities and specifically the environmental, energy, economic and land use impacts of air pollution and its abatement.

Acid Rain is now acknowledged as a serious problem affecting:

- the health of human beings;
- the fabric of historic and contemporary buildings;
- important sectors of the economy such as: forest industries, fishing, tourism and farming;
- the leisure time activities of citizens;
- the ecology of immense areas of the globe, more particularly of the United States and Canada.

A substantial amount of research has been undertaken and conclusions have been reached respecting the causes and effects of Acid Rain. Nevertheless, it is important that research should continue into all facets of the problem.

It is recognized that there are vigorously held views on the causes and effects of acid rain, but it is our opinion that the weight of evidence clearly indicates that it is a very serious problem. It must, at the very least, be drastically reduced at source and that measures must be taken to repair damage already done.

Planners are concerned with the future of regions and communities in the context of their nation's ability to:

- Research existing conditions.
- Forecast trends.
- Project requirements.

- Formulate plans to accommodate needs in the future.

Planners are required to find solutions to a myriad of immediate problems and must always consider them in the context of the long-term future, having regard to the existing and anticipated social and economic environment.

Employment and the location of job opportunities are critical elements in the fabric of urban and rural areas. They affect not only economic and social conditions but also the pattern of land use in every region and community.

The actual and potential effects of acid rain and its abatement are pervasive, affecting both the producer and receiver. The planner must therefore take positive and negative attributes into account in the formulation of plans and policies for the future.

It is recognized that the acid rain phenomena do not respect national boundaries and affect both Canada and the USA. It is thus appropriate and prudent for planners, in both nations, to consider initiatives by their governments in the abatement of acid rain.

APA and CIP have expressed concern about environmental degradation for many years and have urged governments to enact appropriate legislation to deal with the problem of acid rain.

In 1983, APA considered a "Position Paper of the Environment Planning Division of APA on Acid Deposition" which has formed an important component of its subsequent submissions to various government bodies.

In 1985, APA adopted a comprehensive "Policy on Environmental Quality" which contained a section on the atmosphere and addressed the provisions of the Clean Air Act.

In 1987, APA and CIP adopted a "Joint Statement on Acid Rain."

Since 1987, a Task Force of US and Canadian Planners has continued to consider acid rain and legislation in respect thereof.

In a global context it is heartening to note that in 1979, thirty three countries of the Economic Commission for Europe (ECE) plus the US and Canada signed a convention stating that countries should make their best efforts to control trans-boundary emissions. In 1985 this was followed by a protocol signed by 24 member countries plus Canada requiring at least a 30% reduction of sulphur dioxide (SO₂) emissions from 1980 levels by 1993.

In Geneva last August, a protocol was drafted by which, among other measures, signatories would agree to freeze emissions of nitrogen oxide (NO_x) at 1987 levels. It was hoped that when the protocol was opened for signing in Sofia, Bulgaria at the end of October 1988, all members would sign.

In 1985 a convention respecting the protection of the ozone layer was signed. It was followed up by a protocol (Montreal 1987) by which signatory countries agreed to reduce the production and consumption of chlorofluorocarbons (CFCs) by 50% of 1987 production and consumption levels by 1999. Canada has committed itself to banning the uses of CFCs as quickly as possible.

In Canada, its Clean Air Act forms the basis for agreements between the Federal and Provincial governments, all of which have legislation dealing with environmental matters. The Federal government has shown commendable leadership and in Eastern Canada SO₂ emissions are 2.8 million tons, or 35%, less than they were in 1980. All new cars and light trucks were required to meet the most stringent standards by September 1, 1987. Heavy trucks were also required to meet those standards by December 1, 1988. These will reduce NO_x emissions from mobile sources, which are 40% of the Canadian total, by 45% by the year 2000. The governments of Canadian provinces that produce the vast majority of the airborne pollution in Canada have agreed to pursue a vigorous policy to meet 1994 targets for acid rain abatement.

A US / Canadian agreement on abatement policy, and implementing legislation to tackle the problem will thus benefit both countries. In this context it is noted that the US and Mexico have signed an agreement which should, among other matters,

reduce the amount of Mexican airborne pollution that is deposited in the US. The agreement reaffirms the US commitment to Principal 21 of the 1972 Stockholm Declaration on the Human Environment, which states that countries have an obligation to ensure that they do not "export" pollution to other countries causing injury to health and property. The precedent is important in the overall North American context.

These actions clearly indicate that there is a world-wide concern for any action being taken on the problem of atmospheric pollution.

APA and CIP are encouraged by the July 1988 initiatives of members of the Senate Committee on Environment and Public Works respecting S 1894. The Association and Institute appreciate the situation that has led the Committee to modify its previous position respecting costs, the amount of reduction and the time for reduction.

Notwithstanding our appreciation, the APA and CIP remain of the opinion that the situation is so serious that a 10 million tons reduction of SO_2 by the mid-1990's and a 4 million ton reduction of NO_x is still appropriate, bearing in mind the role that the leaders of the Western World must take if they are to remain credible on the international stage.

In regard to the cost-sharing principles put forward by the Senate members, we recognize the imperatives that have lead to this initiative and endorse them.

We note the proposals put forward by the Governors of New York and Ohio on June 6, 1988. The proposals made and the arguments for them are compelling. We trust that this important initiative will give impetus to both the Senate and House in their deliberations.

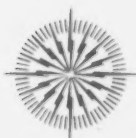
The APA and CIP are aware that the matter of emission reduction is complex requiring a multifaceted approach which includes policies, funding and action in many areas. We are particularly concerned with the effects that acid rain has already had on communities and the effects that vigorous measures to combat the problem will have on the economic life of whole regions as well as individual communities. In this context we note that Canada's SO_2 control program will cost

approximately \$500 million per annum. It is now estimated, however, that the value of damage to forests, fish, wildlife, health and buildings is in the order of \$1 billion each year. The US Congressional Research Service recently estimated that the annual damage of air pollution is between \$5.5 and \$8.2 billion per annum, while the cost of controls and reductions would be between \$6 and \$8 billion.

There seems little doubt that delay in taking action will not be economically beneficial. We are confident that appropriate measures can be taken to maintain the economic viability of areas where substantial changes to industrial activities will have to take place. Job retraining and innovative approaches will be essential elements in the restructuring process. Regional, urban and community planners will be important members of the teams needed to carry out these programs at all levels.

Courageous leadership will be a key factor in gaining acceptance by the general public and those directly affected by measures to remedy the current situation. We recognize that the task is daunting and the solutions both complex and difficult. Nevertheless, an environmentally reasoned approach can gain acceptance for a reasonable political solution.

APA and CIP are prepared to work to find solutions within the areas of expertise of their members. They urge the Congress of the USA and the government of Canada to enact legislation that is reasoned and reasonable to ameliorate a problem that is of global significance and international concern.



AMERICAN PUBLIC POWER ASSOCIATION

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Statement
of the
AMERICAN PUBLIC POWER ASSOCIATION
to the
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
on
S. 1490
Clean Air Act Amendments of 1989

October 4, 1989

The American Public Power Association is the national service organization representing more than 1,750 local publicly owned electric utilities throughout the United States. About one-third of public power systems generate all or part of their electric power needs, and these systems provide about 10 percent of the nation's electrical generation. Over 900 local publicly owned electric systems purchase all or part of their electric power requirements from investor owned utilities, whose wholesale rates are regulated by the Federal Energy Regulatory Commission. Approximately 700 of the 900 are totally dependent for their power supply requirements on their investor owned utility power supplier. Two-thirds of the electric power supplied by public power systems, either by self-generation or wholesale purchase, is derived from fossil fuels, and thus acid rain legislation will have a very large effect on publicly owned electric utilities.

APPA supports effective, economical, and equitable national acid rain legislation and is pleased that the Bush Administration has shown a commitment to cleaning up the air and has come forth with an acid rain control proposal that warrants serious and open-minded examination. APPA believes the Subcommittee on Environmental Protection and the Environment and Public Works Committee can and will design a bill, with the cooperation of the Administration, that will clean up the air while not doing injury to other essential societal needs.

Clean air is a critical challenge for this nation, but it is not the only one. The country must also provide adequate, affordable, and efficiently-produced energy sufficient to enhance the prosperity and well-being of its people. We must not lose sight of one pressing need -- efficient and economical energy production -- while trying to provide another -- clean air.

In focusing on problems in the Administration bill, APPA seeks to solve those problems, not to see another Congress pass without action. Harmful emissions can be reduced without altering, to the detriment of the public interest, the principles of economy and equity on which regulation of the electric utility industry is based.

APPA has long advocated that acid rain control be based on least-cost principles -- without, for example, mandates for the use of high-sulfur coal or technology for

emission reduction. APPA believes the program should be nationwide and should apply in principle to all classes of emitters. APPA also believes that emission reductions should be obtained as cost-effectively as possible.

APPA is aware that this criterion results in assigning a large percentage of total reductions to certain emitting sources, states, and regions. While this principle results in the lowest national cost for the program, it may result in inequities for some groups of ratepayers. For that reason, APPA supports national cost-sharing to defray the costs of emission reduction. The program should include a funding mechanism based on an emissions fee applied to sulfur dioxide and nitrogen oxide emissions from all fossil-fueled sources and source categories for which an emissions fee is feasible. APPA opposes electricity taxes because electricity is not the problem. Kilowatthours generated from falling water or uranium have nothing to do with acid rain. Pollutant emissions are the problem and should contribute to the solution.

Emissions Trading

S. 1490 would allocate emission allowances to "affected" units -- those existing units with emissions over 1.2 lbs. SO_2 /Mtu (In Phase II). Fossil-fueled steam electric units over 75 MW would limit SO_2 emissions to the product of 1.2 lbs./Mtu multiplied by the unit's "baseline," or annual average heat input for 1985 - 1987. Units with the highest capacity factors in 1985-1987 acquire the most allowances, since these used the most fuel. Extra allowances -- to use at other units, to sell, to apply to new plants -- are accumulated only by overcontrolling units below their allowed tonnage limit. Utilities without extra allowances must buy (or lease) them from those willing to sell.

Any new steam electric plant (on line after enactment of the bill) would be required after the year 2000 to obtain allowances from existing plants in order to make up for the new plant's remaining emissions after New Source Performance Standards (NSPS) are met.

The bill conceives allowances to be a private property right. Owners may be expected to use allowances to maximize profits, not to minimize national, regional, or consumer emission reduction costs. The bill gives no reason to expect companies to relinquish private emission rights to potential competitors; to the contrary, the incentive is to hold allowances in light of the new source cap. The proposal could result in monopolization of government-granted emission rights by large utilities; diminished competition in power supply; increased utility mergers and concentration of ownership; and injury to ratepayers whose interests are wholly ignored in a private emissions trading system.

Large utilities may not have to buy allowances, but could obtain them internally. Utilities may choose not to sell allowances, but instead hoard them for future use.

Utilities in growth areas with few allowances from their existing plants may not be able to buy allowances or to buy them affordably. Any utilities with few units or none now must buy allowances to become generators; they may be excluded from the market. Wholesale requirements customers hoping to become more independent of their present suppliers face the likelihood that suppliers will not sell allowances to public power competitors. Wholesale purchasers that want to change suppliers could be prevented because their new supplier cannot serve new load for lack of allowances.

It is not clear, under the Bush bill, that minority owners of generating units would receive allowances, although they would share the cost of reducing emissions. It is possible that the economic benefits of allowances would go to the majority owner or plant operator.

S.1490 will reduce emissions of SO₂ and NO_x at a steep penalty to efficient and economic electric energy production. The emissions trading provisions will inflict grievous competitive harm on small, or clean, or nongenerating sectors of the electric utility industry. The combination of giving large established generating utilities a virtual lock on emissions allowances and, at the same time, establishing an absolute cap on emissions will place all other participants in the electric utility industry -- e.g., publicly-owned utilities, small private utilities, independent power producers, and cogenerators and small power producers -- at a sharp competitive disadvantage. Many publicly-owned utilities effectively will be unable to construct electric generating units without the agreement and active cooperation of their principal competitor, the neighboring private utility, which may refuse to sell allowances as well as refuse to wheel power from a remote generating site as may occur now.

The acid rain provisions of S. 1490 would create a new essential commodity in the electric utility industry -- emission allowances -- and grant a virtual monopoly to a few companies. Because the allowances are to be given for specific existing units, most of which are owned by large private utilities, a potential new entrant to the electric generation market, like a publicly-owned electric utility that now buys bulk power at wholesale, will be unable to construct new electric generation, even if that generation would produce fewer emissions than existing generating units, unless it can purchase an emission allowance. The municipal utility will be competitively disabled at the same time that achievable improvements in air quality are foregone, solely as a result of the market domination of a larger utility.

The likely, if not inevitable, effect of the emission allowance scheme will be to concentrate increasing economic control over the nation's future electric energy supply in the hands of a small group of large private generating utilities with a substantial number of high-emitting units.

This is precisely what Congress sought to end with passage of the Public Utility Regulatory Policies Act of 1978 ("PURPA"). Before PURPA, federal and consumer-owned utilities were the only competitors to private utilities in electricity generation. Congress was dissatisfied with this market dominance in electricity production and sought to open the market to new players in the belief that this would result in a more economic supply of electric energy.

PURPA introduced and fostered entirely new actors in the electric generation market -- industrial cogenerators and small power producers. In addition, IPPs increasingly have become active participants in the market. The emissions trading provisions of S. 1490 will stifle these new actors, except for those IPPs sponsored by wholly-owned subsidiaries of IOUs, because an IPP or cogenerator or small power producer, like a publicly-owned electric utility, will not be able to construct a new electric generating unit without first purchasing an emission allowance. The emission allowance provision of S. 1490 will create significant, if not insurmountable, barriers to entry for potential competitors in the electric generation market.

Furthermore, the ability of utilities, particularly publicly-owned electric utilities, to compete for loads and resources or, in this case, emission allowances, would be constrained by investor-owned utility dominance and control over

transmission services. The emissions trading proposal would add to already excessive constraints on competition. If the proposal is intended to increase market efficiency, it will fail on its own terms: efficiency is only obtainable through competitive markets.

History has shown that all electric consumers ultimately benefit from the competition that publicly-owned and other electricity providers afford to the market. Congress should not do irreparable harm to essential competition in the electric utility industry in the name of cleaner air. APPA is concerned that S. 1490 will do just that and opposes the bill's emissions trading provisions.

The Impact of Emissions Caps

S. 1490 achieves emission reductions by setting an absolute limit on tons of SO₂ emissions allowed for each "affected" generating unit. The cap would be set in Phase II by multiplying a rate of 1.2 lb. SO₂/mmBtu by the unit's "baseline," or annual average heat input for 1985-1987. The "owner or operator" of each existing affected unit would receive one "allowance," or right to emit, for each ton of SO₂ emission legally permissible.

A unit may operate at a greater heat input -- or capacity factor -- than it did in the base years only by reducing its emission rate below 1.2 lb. SO₂/mmBtu. This means that a great many units will be limited in hours of operation unless their emission rates can be reduced enough below 1.2 to compensate for any increased levels of use.

A utility with one or few units will have fewer options for economic compliance than a utility with many units will have. A unit with low operating factors in the base years will have few allowances, even after reducing emissions to 1.2 lbs. It might obtain such allowances within the utility system if other suitable units in the system exist and are overcorrected to provide spare allowances.

If the utility has no other such units, then the base-year under-utilized unit has a problem. It must either obtain allowances from another utility, walk away from the unit's available capacity by maintaining low-level operation, or increase unit use by achieving a lower emission rate. None of these options may make economic sense. Allowances may not be available or affordable; abandoning plants partly or wholly may be done, but should not be in a prudent society; and the necessary emission rate may be forced down so far by a low capacity factor as to multiply costs.

One APPA member utility has a unit with a 1985 emission rate of 1.3 lbs. SO₂/mmBtu and operated at a 12 percent capacity factor. This relatively clean plant must switch fuels in order to continue to operate at a capacity factor of 12 percent plus. Even if the utility scrubbed the plant to drop the emission rate to .39 lbs. SO₂/mmBtu, it could never exceed a 37 percent capacity factor under the tonnage cap of S. 1490. No matter how clean, it could not be used for baseload. This result is irrational and wasteful and should not be permitted in acid rain control legislation.

The tonnage cap has nothing to do with the generating capacity of the unit or the system, with its level of operation now, with future need, or with the cost of compliance (most particularly per ton of SO₂ reduced). The cap is consequently punitive to consumers and utilities with low unit operation in the base years for any reason and rewards consumers and utilities with high operating levels and, of

course, high emissions.

Many utilities operated at low capacity in 1985-1987 in areas where these were years of recession and in areas with large capacity surpluses. Utilities often bought low-cost economy power and backed out their own units. Some utilities instituted successful conservation programs, and since less energy use means fewer allowances, they may lack enough allowances when, because of future load growth, they need to increase operation or build new plant.

S. 1490 confers emission rights inequitably and should be amended to avoid this result. The tonnage cap could be revised, for example, to ensure that economic and load growth can be accommodated and that emission rates for individual units are not lowered so much that flexibility in compliance strategies is lost.

The cap appears to be a forcing mechanism to induce utilities both to undertake conservation measures and to consider non-coal-based generating technologies, including natural gas and nuclear generation. If the country is to turn away from coal and turn toward other resources, that change should be made explicit and should be planned.

Acid rain is not an isolated ill that can be cured without reference to economic welfare or the energy supply system. The industrial economy is to a significant extent driven by electricity, and the nation is in trouble if supply is insufficient, or uneconomical, or inefficiently provided, or environmentally destructive. These problems are all of a piece. Trade-offs among environmental protection measures, economic well-being, and energy production and use should be explicit and acceptable.

For example, it may be prudent not to place excessive reliance on abundant natural gas supply for generation. For large scale supply, two obvious alternatives are nuclear and hydroelectric power. There is a large untapped hydro potential in Canada that could meet energy demand in the Northern tier of the United States, and "passively safe" nuclear plants are a future option. Should nuclear and Canadian hydro dam construction be encouraged?

Renewable energy technologies and energy efficiency improvements are a critical element of a workable emissions reduction/energy supply strategy. Yet federal renewable energy funding has dropped 82 percent since 1980. Fuel cells turn gas into electricity through a chemical reaction, efficiently and cleanly, but the American fuel cell industry is adrift with federal R&D funding down. Renewable energy companies are selling out to Japanese and European firms.

Units below 75 MW Capacity or 1.2 lbs. SO₂/mmBtu Emission Rate

These categories are subject to different constraints under S. 1490 than larger or higher-emitting units. Such units may not exceed their actual 1985 emission rates. They have no tonnage limits and are not limited on operations. Also, they are not "affected" units as the bill defines them, and they receive no allowances; they may elect to be "affected," but could still receive few allowances.

Many municipal generating units under 75 MW capacity would incur inordinately high costs if required to reduce emissions. Their exclusion from emission reduction requirements is an important recognition of the high cost and low benefits of targeting small plants for emission cuts.

The situation of low-emitting fossil fuel units is more problematic. Natural gas-fired steam units depend on the ability to burn oil in the event of gas curtailment in peak seasons or of gas price increases above oil prices. The ability to burn oil if gas market conditions deteriorate is a condition of viability for some generating units and also exerts downward pressure on the price that gas suppliers could charge because customers have an alternative fuel.

Under S. 1490, gas-fired units may not increase SO₂ emission rates (by burning oil); also, they may not buy emission allowances because they are not "affected". It appears that their only recourse is to purchase replacement power, which could force some clean-burning gas units out of service.

Some coal-fired units with very low 1985 emission rates may face serious problems if their low-sulfur coal supplies cannot be sustained under present long-term contracts. One APPA member utility in Nebraska operates a pre-New Source Performance Standards plant that burned low-sulfur coal at an emission rate of .68 lbs. SO₂/mmBtu in 1985. Its 1985 supply came from one of the Powder River Basin's lowest-sulfur content coal seams (.30% sulfur). That seam is now exhausted, APPA has been informed, and the utility does not expect that its coal supplier can ever again supply coal as low in sulfur as in 1985. (The plant's current emission rate is .8 lbs.) Although Energy Information Agency data shows that a very few powerplants burn coal as low or lower in sulfur (though not by much), it appears that the utility would have to break its current long-term contract to shop for very limited, and possibly very costly, amounts of extremely low sulfur coal. APPA does not believe this is a reasonable result.

Lastly, the bill is biased against clean utilities in granting allowances only to high-emitting utilities that can overcorrect or retire a unit. Low-emitting utilities would be unable to generate allowances and to build new fossil-fueled generation, except as high-emitting utilities which do have allowances decide to permit.

These problems result from S. 1490's extremely rigid emissions limitations for clean plants. The solution appears to require somewhat greater flexibility. For example, units with emission rates under 1.2 lbs. might be required to maintain the lesser of their SIP-permitted emission rate or 1.2 lbs. SO₂/mmBtu. Alternatively, the bill could adopt a reasonable and attainable definition of a "clean" emission rate. In either case, if the government is to grant emission rights to utilities -- a guaranteed future market share -- it is not defensible for government to do so inequitably at the outset. Clean utilities should be no less able than others to build new generating plants.

Clean Coal Technology Incentives

S. 1490 contains a number of incentives to encourage clean coal technology (CCT) development, including a three-year deadline extension for certain repowering technologies. APPA supports the deadline extension for technologies requiring further demonstration, but believes the appropriate standard for the extension is the need for further demonstration of any given clean coal technology. Thus extended deadlines may be justified for some projects other than repowering projects.

The deadline extension applies equally and fairly to all utilities and may encourage the utilization of CCT for compliance with emission reduction requirements. The federal regulatory incentive section (Sec. 515) of S. 1490

provides that the Federal Energy Regulatory Commission (FERC) will establish, by rule, a 5-year demonstration program for CCT regulatory incentives, including an incentive rate of return and a 10-20 year amortization period for four CCT units of each technology "class". These incentives, which would apply at the federal level only and to wholesale transactions only, should be deleted from S. 1490 for several reasons:

- o The bill's ratemaking incentives apply not to individual projects, but to CCT technologies and even non-coal technologies, whether proven or not, commercial or not. The technology need only fall short of "widespread use." This standard is undefined and unjustified and should be rejected.
- o The "incentives" apply only to wholesale transactions, which are less than 20 percent of all utilities' sales. The extra revenues obtained from wholesale customers would be insufficient to generate CCT investments. They would simply provide excess profits to utilities already undertaking CCT projects.
- o The ratemaking incentives would force public power systems and rural electric cooperatives, as wholesale customers of private utilities, to finance an unfair share of CCT development. The subsidy extracted from wholesale customers would create or aggravate anti-competitive price squeeze situations because the incentives will force inflation of retail rates of public power systems while private utilities will not collect in their retail rates similar rate increases for CCT projects.
- o Utilities could be encouraged to form independent generating subsidiaries to bypass state regulation and to receive liberal regulatory treatment through FERC regulation.

BIG STONE PLANT

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COAL MINING COMPANY
 A Subsidiary of MCV Resources Corp. Inc.

810 North Kearney Drive
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 (701) 323-4771

Also Locations:
 Bismarck, ND
 Cassin, ND
 Strong, ND

MONTANA-DAKOTA UTILITIES CO.
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OTTER TAIL POWER COMPANY
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NORTHWESTERN PUBLIC SERVICE COMPANY
 3rd Street & Dakota Avenue South
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Testimony of the Big Stone Owners
 and
 the Knife River Coal Mining Company

to the

Environmental Protection Subcommittee
 of the Senate Environment and Public Works Committee

on

Acid Deposition

October 13 1989

25-C57 1021

INTRODUCTION

The Big Stone Owners and the Knife River Coal Mining Company appreciate the opportunity to present their views on certain proposals establishing a national acid deposition (also known as acid rain) control program.

The Big Stone Owners (hereafter known as Big Stone) operate the Big Stone station, a baseload electric generating facility located in northeastern South Dakota. The Big Stone Owners are the Northwestern Public Service Company, headquartered in Huron, South Dakota; Montana-Dakota Utilities Company, headquartered in Bismarck, North Dakota; and the Otter Tail Power Company, headquartered in Fergus Falls, Minnesota. The Otter Tail Power Company acts as manager of the facility.

The Knife River Coal Mining Company (hereafter known as Knife River), headquartered in Bismarck, North Dakota, is a wholly-owned subsidiary of MDU Resources Group, Inc., which also owns Montana-Dakota Utilities Company. Knife River produces lignite from coal mines in North Dakota and Montana. Big Stone purchases all of its coal from Knife River's Gascoyne mine in southwestern North Dakota.

I. SUMMARY

Big Stone and Knife River acknowledge recent efforts by members of the House and Senate and the Administration to develop sound clean air legislation. As corporations involved in energy businesses, we realize the significant role of efficient energy use and conservation in protecting the environment. As companies with interests in resource extraction, we also believe in responsible development of our nation's natural resources. And, as regulated utilities, we must utilize the most cost-effective options to provide high quality, reasonably priced electric service to our customers.

We support the concept present in both S. 1490 and the recently announced Mitchell-Baucus legislation allowing electric utility facility managers to choose among emission-reduction options. This "market-driven" approach has the potential to lessen compliance costs necessary to achieve mandated emission reductions, and will allow facility managers flexibility to tailor reduction strategies to individual facility and service territory needs.

Big Stone and Knife River support provisions which allow special treatment for "clean states." However, we urge expansion of the criteria utilized to determine clean state status. The fact that certain low-emission states, such as

South Dakota, are by definition excluded is not only unfair, but illogical. Furthermore, Big Stone and Knife River believe there is a need for refinement of proposals dealing with emission caps, emission trading, permitting, fees and penalties, and nitrogen oxides reduction methods.

Finally, we urge consideration be given the subject of job preservation. Clearly, some proposals to lower acid rain emissions would provide incentives to fuel switch to lower sulfur content coal as an emission-reduction method. Although this is a viable option, it would have a near disastrous impact on certain communities in the western United States, as well as in the East, whose economies are dependent on coal mining. Clean air provisions aimed at reducing emissions could be crafted to provide additional options which maintain both flexibility and have the potential to preserve coal-mining jobs.

II. S. 1490, The Clean Air Act Amendments of 1989

Acid Rain Provisions

S. 1490, a bill developed by the Administration to reauthorize the Clean Air Act would add a new title aimed at reducing emissions of acid rain precursors.

Big Stone and Knife River recognize the "ground-breaking" nature of this proposal, and note its generally balanced approach to reducing sulfur dioxide and nitrogen oxides emissions. However, modifications in certain provisions could provide not only the above-mentioned emission reductions, but are essential to ensure availability of the very flexibility the legislation implies. Listed below are refinements we believe would strengthen the legislation, as well as suggested additional options addressing job retention.

Emission Caps/Emission Trading

S. 1490's maximum sulfur dioxide emission rate of 1.2 lbs. on existing affected units, and the requirement on new units to acquire allowances equal to 100 percent of actual emissions of sulfur dioxide, would severely hamper development of new electric capacity in clean states such as Minnesota, North Dakota, and South Dakota. Indeed, the emission cap idea actually rewards utilities with older, more polluting units by granting them large numbers of allowances, while leaving newer, cleaner units with virtually no excess allowances to use or trade. Allowing clean states to average or trade emissions, as well as trade allowances, or providing an emission cap for clean states which allows for a limited amount of growth, would provide reasonable solutions to this problem.

Permitting, Fees, and Penalties

New permitting requirements under S. 1490 would create a substantial burden on states with units which are already in compliance with New Source Performance Standards (NSPS). Many of these states do not have the staff and budget to perform the sophisticated processes required by the legislation. Big Stone and Knife River recommend units currently covered by the NSPS be exempted from new permitting requirements; and that consideration be given to keeping costs associated with submission of plans reasonable. Big Stone and Knife River further suggest per-ton permitting fees be based on reasonable and necessary costs associated with program administration. Arbitrarily set fees amount to emission taxes-in-disguise. Finally, new enforcement provisions laid out in the legislation would give broad new powers to the federal Environmental Protection Agency and citizen complainants, at the expense of the rights of owners of affected units. Big Stone and Knife River propose keeping effective existing enforcement laws, rather than replacing them with a new regime.

Nitrogen Oxides Reduction Methods

No nitrogen oxides emission rate reductions are specified in S. 1490; rather, the legislation requires certain technology applications to achieve emission reductions. These requirements create a vague, uncertain system for affected

units. Big Stone and Knife River believe other proposals, like that in recently announced legislation by Senators Baucus and Mitchell, provide a far more practical approach to achieving nitrogen oxides emissions reductions.

Expand Clean Coal Technology Definitions/Time Extension

As currently drafted, S. 1490 limits compliance time extensions to those utilities which "repower" with specified clean coal technologies (CCT). Big Stone and Knife River suggest a broader range of facilities would be willing to consider CCT as a compliance option if precombustion, combustion, or postcombustion applications also qualified for time extensions. Time extensions are necessary to ensure further development of technologies, and the proper installation, testing, and re-certification of a facility before bringing it back into commercial operation. Big Stone and Knife River believe the three-year limit will preclude certain facilities from considering CCT options. Innovative CCT concepts, like many of those submitted to the Department of Energy as part of its Clean Coal Technology Program Round III, will not be ready for commercial installation for a number of years, and therefore would require more than three years to place in service. Rather than preclude use of a large segment of CCT options, we recommend allowing a longer time extension for units wishing to use CCT applications. Time extensions should be as brief as possible, but also

allow the above-mentioned activities of installation, testing, and recertification to occur in an efficient manner.

Special Incentives for Retention of Mining Jobs

In addition to the above-mentioned recommendations, Big Stone and Knife River recommend certain other options which could provide for preservation of coal mining jobs. Generally speaking, we recommend making additional incentives available to affected units wishing to use precombustion, combustion, or postcombustion CCT applications, and which agree to retain their current coal supplier.

Fee retention. Big Stone and Knife River do not support imposition of emission-based fees or Btu taxes to "cost share" with other utilities. Should such fees be imposed, however, it is recommended that electric utilities electing to use CCT and maintain their current coal supplier be permitted to keep collected revenues on-site. This would be accomplished through requiring the utility to invest an amount equal to the tax collected in the CCT application. In this way, the utility would still participate in the fee system, but would be allowed to keep the funds "at home."

Special demonstration programs. Big Stone and Knife River recommend that special CCT demonstrations be established. Criteria would include a requirement for employing new and/or

emerging technologies while keeping a facility's current coal supplier. Exemptions from sulfur dioxide emission reduction requirements would be allowed throughout the term of the demonstration.

(Specific legislative language on these concepts has previously been given to the staff of the Environment and Public Works Committee.)

III. Acid Deposition Control Act of 1989

In late September, Senators Mitchell and Baucus announced the development of a proposed piece of acid rain legislation entitled "The Acid Rain Deposition Control Act of 1989." This proposal would add provisions to the Clean Air Act aimed at reducing emissions of acid rain precursors, namely, sulfur dioxide and nitrogen oxides.

Big Stone and Knife River agree with the emphasis on providing flexibility to facility operators in complying with emission-reduction requirements in the legislation. Also notable is the inclusion of the "Clean States" provision. Acknowledging efforts to restrain emissions, particularly by western utilities, is appreciated.

Although the proposal presents a strong framework from which to address acid rain reduction, Big Stone and Knife River are concerned with several additional issues; specifically, certain Clean States criteria.

The Clean States Program

The Clean States program represents an innovative effort to provide credits to those states with coal-fired units possessing low sulfur dioxide emission levels. Indeed, the special treatment allowed under this program will have a beneficial impact on ratepayers in clean states, as it recognizes investments in air quality covered in rate-based costs of new, low-emission, coal-fired electric generating facilities.

South Dakota Participation in the Clean State Program

One of the "cleanest" states, from the perspective of overall sulfur dioxide emissions, is the state of South Dakota. With less than 50,000 tons per year of sulfur dioxide emissions, the state should easily qualify for the Clean State program. Unfortunately, due to the fact that nearly all of the state's sulfur dioxide emissions come from one facility which was built in the early 1970s and has only particulate emission reduction equipment--the Big Stone Plant--it is excluded from participating.

The situation is even more ironic when it is considered that a number of states surrounding South Dakota, which emit larger quantities of sulfur dioxide emissions, qualify for the Clean State program. Indeed, as a proportion of the 10-million-ton per year sulfur dioxide emission reduction required by the bill, South Dakota's share amounts to less than four-tenths of one percent, virtually *de minimis* when compared with states east of the Mississippi, such as Ohio and Indiana.

Exclusion from the Clean States program would have wrenching economic impacts not only in those parts of South Dakota served by Big Stone, but in neighboring states as well. In North Dakota, the Gascoyne mine, owned and operated by the Knife River, could potentially lose its sole customer if the Big Stone Plant was forced to fuel-switch to low-sulfur coal. While the overall numbers of affected workers and families in North Dakota would not be large, the impact would still be significant due to the fact the Gascoyne mine is one of the largest employers in the southwestern corner of the state. As that area's other industries are farming and ranching, there is little in the way of alternative employment opportunities for displaced workers.

Although located in South Dakota, the Big Stone Plant exports much of its power to serve ratepayers in the states of North

Dakota, Minnesota, Montana, and the region served by the Mid-Continent Area Power Pool. Therefore, any required modifications to the plant to bring it into compliance with the goals of the legislation would directly and financially affect utility ratepayers not only in South Dakota, but also in the very states the Mitchell-Baucus legislation attempts to protect.

Big Stone and Knife River recommend resolution of this inequitable situation via removal of the "70 percent reduction . . . below uncontrolled emissions levels" language. This provision unfairly excludes clean states from the program by creating an artificial test that is blind to the fact of low overall emission levels.

Exemption for Single Unit States

Big Stone and Knife River further recommend special consideration be given to development of an emissions-reduction program for "Single Unit States." Available only for states that have a single qualifying unit, and have 70 percent of covered emissions from that facility, the program would permit additional time for emission-reduction compliance. Special permits would be required to document emission-reduction efforts, and an annual sulfur dioxide emission limitation would ensure compliance with the basic thrust of the legislation.

(Legislative language detailing this provision is attached to this testimony and would become a part of Section 406 of the Mitchell-Baucus bill.)

Include Nitrogen Oxides Emissions in the Clean States Program
Finally, the Clean State program should include nitrogen oxides as well as sulfur dioxide emissions. States qualifying for the Clean States program due to low sulfur dioxide emissions have correspondingly lower nitrogen oxides emissions. Low-emission facilities, regardless of emitted substance, should be given credit under this program.

IV. Conclusion

Big Stone and Knife River believe that lowering emissions of acid rain precursors will provide real benefits to the nation. Proposals currently pending before Congress contain a framework for a workable program for sulfur dioxide and nitrogen oxides emissions reductions. Serious issues must be addressed, however, to ensure that environmental improvements do not come at the expense of cost-effective options, local economic stability, or sharply higher utility rates in states that already have invested in low-emission, coal-fired electric generating plants.

Indeed, Big Stone and Knife River believe that low-emission states should receive special consideration. In particular, the State of South Dakota, with one of the lowest levels of annual sulfur dioxide emissions, should be included as a clean state. Finally, Big Stone and Knife River believe that it is essential to retain the market-driven, flexible approach implied in the proposals now before Congress. Only by allowing tailored emission-reduction solutions to fit each individual facility's needs will ratepayers, utilities, and environmental interests all share in the benefits of sulfur dioxide and nitrogen oxides emissions reductions.

SUGGESTED LANGUAGE ON "SINGLE UNIT STATES"

Section 406 (f)

"(f) Single Unit States -- After December 31, 2000, any state with total actual 1985 emissions of less than 50,000 tons of sulfur dioxide, and having over 70 percent of covered emissions from a single affected unit under Sections 404, 405, and 407 shall have the single affected unit comply with the standards established in Section 406(c) as of January 1, 2010, or on the date thirty-five years following the completion of the construction of the affected unit, whichever is earlier. Qualifying single affected units shall be required to file permit applications with authorized state permitting authorities under section 408(d). Said permits shall make unlawful total actual annual emissions of sulfur dioxide in excess of 100,000 from single unit states.

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October 6, 1989

SENATE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

The Honorable Max Baucus, Chairman
SD-458 Dirksen Senate Office Building
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**RE: Emissions Trading in Reliability Regions as Pertaining
to the Acid Rain Title of Proposed Clean Air Legislation.**

The Mid-Continent Area Power Pool (MAPP) is comprised of 43 member utilities serving nearly 16 million people in Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Montana, Wisconsin, Illinois and the Canadian provinces of Saskatchewan and Manitoba. Within the 890,000 square miles of the region, electric energy is transmitted over 20,000 miles of transmission lines. Members commonly buy and sell power through the system's transmission facilities based on the economics of generating versus purchasing energy. Short-term and long-term contract energy is also transmitted as is energy purchased on an emergency basis when mechanical and other problems necessitate such purposes.

Representatives of MAPP have reviewed the proposed legislation with respect to market factors and industry flexibility intended by the President, and respectfully submit the following comments for consideration in your mark-up sessions:

1. We believe the draft legislation does not go far enough in providing industry flexibility and initiative in finding ways to economically meet emission reduction goals. It is our belief that power pools and reliability regions such as MAPP offer unique organizations and mechanisms which may be used to both coordinate and account for utility generating plant emission reductions made within, or between, regions; and that if thus handled, greater utility flexibility and economy may be achieved at substantially reduced administrative burden to both the Government and to industry.
2. We propose that emission reduction credits to be traded be those utility emission reductions in excess of Phase I and Phase II requirements.

Ames Municipal Electric System • Basin Electric Power Cooperative • Cedar Falls Municipal Utilities • Central Iowa Power Cooperative • Cooperative Power
Corn Belt Power Cooperative • Cumberland Municipal Utility • Dairymond Power Cooperative • Delano Municipal Utilities • Fremont Department of Utilities • Glencoe Municipal Electric Plant
Grand Island Electric Department • Harlan Municipal Utilities • Heartland Consumer Power District • Hibbing Public Utilities Commission • Interstate Power Company
Iowa Electric Light and Power Company • Iowa-Illinois Gas and Electric Company • Iowa Power and Light Company • Iowa Public Service Company • Iowa Southern Utilities Company
Lincoln Electric System • Madelia Municipal Light & Power Department • Manitoba Hydro • Minnesota Power • Minkota Power Cooperative, Inc.
Missouri Basin Municipal Power Agency • Montana-Dakota Utilities Co. • Municipal Energy Agency of Nebraska • Muscatine Power & Water • Nebraska Public Power District
North Iowa Municipal Electric Cooperative Association • Northern States Power Company • Northwest Iowa Power Cooperative • Northwestern Public Service Company
Northwestern Wisconsin Electric Company • Omaha Public Power District • Otter Tail Power Company • Owatonna Municipal Public Utilities • Rochester Public Utilities
Saskatchewan Power Corporation • Southern Minnesota Municipal Power Agency • United Power Association • Western Area Power Administration, Department of Energy

The amount of emission trading, if any, that actually will go on is unknown at this time. It will depend on whether there is a cap on emissions, the future need for more generating capacity, the technologies available to meet future demand, and how trading is regulated. It would also depend on the number of utilities in each region who elect to participate in an emissions trading program, as we feel it essential that each utility retain full autonomy to decide if, when and to what extent it wishes to participate.

3. We propose that consideration be given to the concept of emissions reduction "banking". In this concept, a utility could bank its emission reductions (or receive credit) to be used by itself or to be traded to others in the future. Banking should be allowed to begin immediately to encourage reductions in advance of their being mandated.
4. Legislative language should contain a provision for compliance plan modifications made necessary due to emergency situations. Utilities may apply for modifications in their compliance permits to take care of emergencies or for planned situations that may cause an exceedence of the compliance permits. Such modifications would require the utility to meet the compliance permit emission levels through utilization of banked emission reduction credits or purchase of emission reduction credits from other utilities.
5. Reliability regions and/or power pools such as MAPP should be utilized to facilitate and account for emission trading for three basic reasons:
 - A. Reliability regions/power pools are already federally endorsed to insure electrical reliability within regions. They accomplish this through efficient computerized energy accounting and communication systems that can be adapted to accommodate emission trading data.
 - B. Reliability regions/power pools structure lends itself to helping utilities meet compliance permit restrictions in two ways:
 - 1) Long Term Planning. Through professional engineering staff, computerized analytical and networking facilities, and inter-utility organizational structure, regions/pools facilitate long term planning for utilities in meeting their energy requirements. This is in place now and can be used to aid utilities in meeting their compliance permits while insuring reliable electrical power supply.

- 2) Emergency situations. Reliability region/power pools aid utilities in meeting their power and energy requirements in emergency situations by providing a virtually instantaneous marketplace for emergency energy purchases. They could similarly aid utilities in meeting their compliance plans.

C. Regions/pools are built on the premise of economy through group action. Group contingency planning is the very foundation of a power pool. Without group contingency planning, each utility would have to plan for all possible contingencies itself. In the extreme case, redundant generating, transmission and distribution facilities would be necessary to guarantee a high level of reliability of electric service. Instead, in a pool arrangement, redundant facilities are minimized.

Similarly, staying within the allowances contemplated by the proposed legislation requires contingency planning. Assuming that MAPP member utilities each will have their own allowances of SO₂ emissions, the MAPP organization could help to coordinate transactions among its member systems, or between pools. The economy gained by conducting the transactions within the pool organization would be through increased flexibility for utilities made possible by group contingency planning as opposed to each system planning for its own contingencies.

Example:

Consider a utility which relies heavily on nuclear or hydroelectric generation, and its allowances for SO₂ emissions are not adequate to meet the electrical needs of its customers using fossil generation alone. Should the nuclear plant experience an extended outage or a drought decrease the amount of hydroelectric generation available to operate in the most economical mode, that utility will want to maximize the use of its fossil generation. However, it will likely be limited by the emission allowance which was based on a mix of generation during the baseline years. That utility will wish to seek allowances from another utility, but will not have prearranged the transaction because it could not have been anticipated.

In a pool arrangement such as MAPP, utilities are accustomed to adjusting to emergencies through joint contingency planning. Through the pool an appropriate level of emissions could be identified, banked and maintained, ready for emergency use. Each pool member who voluntarily participates in a regional trading program would have responsibility for a share of that reservoir, either through its own program of emission reductions or by contract with another utility or

industrial source if that is more economical. The transaction would simply be a formality. Pricing mechanism could be determined in a manner similar to capacity and energy sales. The pool could make a record of all such transactions and report annually to the state and federal regulatory agencies involved.

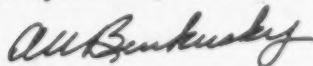
This system allows much more flexibility than the system of trading contained in H.R. 3030 which involves complicated and inflexible compliance plans with a six month review and approval process. If the objective is to use the marketplace to achieve environmental goals in the most cost-effective and economically efficient manner, then it would be expedient to use a marketplace which is a proven mechanism among utilities.

In conclusion, while many details would remain to be worked out, the broad concept of inter-utility emissions trading within and between reliability regions appears to have sufficient merit that it should be included in any new legislation, at least as an option.

The MAPP organization has strengths that lend themselves to the job of achieving regional utility emission reductions in the most economical way. The strengths include joint planning for new facilities on a regional basis, coordinating transactions between utilities for the sale of power, and ensuring reliable electric service. We believe these strengths can be utilized to help meet national emission reduction goals.

We appreciate this opportunity to share our views. Should you desire any follow-up information, please contact us through the MAPP office in Minneapolis.

Respectfully Submitted



A.W. Benkusky
Chairman
Mid-Continent Area Power Pool



Northern States Power Company

414 Nicollet Mall
Minneapolis, Minnesota 55401
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NORTHERN STATES POWER COMPANY COMMENTS ON ACID RAIN LEGISLATION

Mr. Chairman, Members of the Subcommittee, thank you for allowing me to discuss Northern States Power Company's views on the critical issue of acid rain legislation. We are pleased that it appears as if Congress finally will pass legislation to mitigate acid rain causing emissions.

I. BACKGROUND

Northern States Power Company (NSP) is an electric and gas utility serving approximately 1.3 million consumers in Minnesota, Wisconsin, North and South Dakota and Michigan's upper peninsula. NSP has long recognized that our public service obligation consists of more than simply providing least cost, reliable energy. We believe, as do the citizens of Minnesota, that we must also respect our nation's environment. We view acid rain as an environmental problem of international magnitude with potentially far reaching consequences. Thus, we continue to consider these issues when we plan our power supply and to evaluate the potential impact our decisions will have on the environment.

This is the spirit in which we are here today. NSP wholeheartedly supports the passage of comprehensive acid rain legislation designed to maintain the integrity of our nation's lakes and rivers, forests and farmland, and scenic beauty. We believe these goals can and should be met without placing an unfair burden on our customers or shareholders.

II. THE NSP SYSTEM

NSP has invested more than \$600 million in pollution control over the last 20 years, \$350 million of it to mitigate acid rain causing emissions. Additionally, we burn low sulfur coal. Our system average SO₂ emission rate is .54 lbs/MBtu, far below the 1.2 lbs/MBtu ceiling proposed by the most stringent acid rain legislation before this committee. From 1970 through 1988, NSP decreased its SO₂ emissions by 74 percent while increasing fossil-fired generation by 51 percent.

This record has earned NSP accolades from the Friends of the Earth Foundation and the New Hampshire Citizens Task Force on Acid Rain in the form of awards for making outstanding contributions toward solving the acid rain problem. NSP is justifiably proud of its environmental record.

Sherco 1 & 2

Our first two Sherburne County (Sherco) units came on line in 1976 and 1977. Each can produce 710 megawatts of electricity. These two units were on line 90 percent of the time from 1985 through 1987, with an average capacity factor of 65 percent. Sherco 1 & 2 utilize wet scrubbers to neutralize and trap SO₂ and gases created in the burning process. These scrubbers cost NSP's customers approximately \$35 million to install. In addition, the two units burn 100 percent Western low-sulfur coal. Their 1988 emission rate was .35 lbs/MBtu.

Sherco 3

Sherco 3, the largest and newest unit in our system, produces 868 megawatts of electricity, began commercial operation in November, 1987, and recorded an outstanding 1988 on-line performance of 93 percent, with a capacity factor of 69 percent. Nearly 30 percent of this plant's construction cost of \$1.1 billion is invested in pollution control equipment. Its dry scrubbing system and baghouse filters, which remove SO₂ and particulates -- the largest dry air quality control system in any power plant in the county -- cost our customers \$230 million. Sherco 3 also burns low-sulfur Western coal. Its 1988 emission rate was .36 lbs/MBtu. We are exceedingly concerned about how emission limits would be calculated for Sherco 3 under the administration bill, since it did not operate during the administration's proposed 1985-1987 baseline years.

Riverside

Riverside 7, a 140-megawatt unit equipped with a dry scrubber and baghouse, is a 1981 retrofit project and was the first operating utility-scale demonstration of the technology. The cost to NSP customers is \$8.2 million. Riverside 7's 1988 emission rate was .74 lbs/MBtu.

Black Dog

NSP has successfully applied one of the first clean coal technologies in the United States at its Black Dog generating plant. NSP converted a boiler to a fluidized bed combustor, a technology which improves the efficiency rate of combustion and uses limestone to trap SO₂ without additional scrubbing. This 130 megawatt unit has one of the first utility sized fluidized beds in the country. The investment, made in 1985, cost our customers more than \$57 million.

III. THE CURRENT DEBATE

NSP has endorsed several principles to guide the development and passage of acid rain legislation. They are attached to this testimony; we request that they be inserted into the hearing record.

This committee has debated acid rain legislation for many years. You know the divisiveness of the issues that must be resolved. We will focus our remarks on a few of these issues.

A. Emissions Trading and Offsets for New Growth

NSP has long supported federal action to reduce acid rain causing emissions at the lowest possible cost. Recently, various market oriented trading schemes have been proposed which would allow utility systems to purchase or sell rights to emit SO_2 and oxides of nitrogen from other utilities or industries to reduce SO_2 and NO_x .

The trading scheme receiving the most attention from the Congress is contained in H.R. 3030 and S. 1490. We are extremely concerned with this trading scheme for several reasons.

First, utilities with low system-wide emission rates, such as NSP, might not be able to generate sufficient offsets internally to add new capacity. To do so, we must reduce our exceedingly low current emission rate even further, and this certainly could not be done efficiently or cost-effectively. This means that a company with low system-wide emission rates would have to purchase offsets in the marketplace at potentially prohibitive costs. Many of the utilities with the greatest number of offsets will be those companies that have dragged their feet longest in reducing SO_2 emissions. This penalizes utilities that have led the nation in reducing SO_2 . Conversely -- and perversely -- this scheme rewards the recalcitrant systems by providing them with a potentially valuable asset, and thus could encourage delay in achieving environmental clean-up goals. A company like NSP, with a system-wide SO_2 emissions rate of .54 lbs/MBtu, would be forced to purchase offsets from systems with current emission rates of 3 lbs/MBtu or higher. This proposal clearly sends the wrong signal to utilities/companies that have led the way in protecting the environment: Delay cleaning up and you will be rewarded, it says.

Another potential problem: This trading scheme assumes that companies holding the offsets will be willing to sell them. This is in no way clear.

Utility industry witnesses have testified before the House Energy and Commerce Committee that they would not be inclined to sell their offsets. Thus, offsets sufficient to add new coal-fired generating capacity might be unavailable in some regions of the country, raising serious implications for the nation. Those utilities serving rapidly growing areas will be hard-pressed to add new coal-fired capacity. Additionally, if certain statutory changes were made to the Public Utility Holding Company Act, other utilities could build power plants in our service territory simply because they hold offsets.

Other problems relating to the proposed trading system have come to the fore. The proposal assumes that state Public Utility Commissions (PUCs) would allow their native retail utilities to sell offsets. However, many state commissioners have stated that they might be unwilling to permit this, believing the offsets necessary to add new capacity in their own states. Additionally, the goal of the trading system is to provide those with offsets with an incentive to make money. However, PUCs may believe that these offsets are assets which have been paid for by ratepayers and, as such, the return on the investment should flow back to the ratepayers. Thus, regulatory treatment of offsets may also provide a disincentive for trading.

NSP would like to work with the Congress to craft a workable trading system and one that is fair to clean utilities and their customers. One potential mechanism that would allow clean utilities to add new capacity is to grant offsets in the form of conservation credits. Such a mechanism has the considerable additional merit of providing utilities with an incentive for conservation. Under such a process, a utility which implemented a conservation program that achieved real energy savings and, thus, reductions of SO_2 , would receive conservation credits which could be utilized as offsets for the development of new facilities. Other mechanisms available to accommodate growth are to exempt systems now emitting less than .6 lbs SO_2 /MBtu from the offset requirements, or grant them offsets for the amount between .6 SO_2 /MBtu and a higher emission level.

In the last decade, competition has been introduced into electric power markets as a result of changing economics and statutory requirements. As a result, the nation's electricity is supplied by a more diverse group of generation servers. The nation is counting on these suppliers and others to supply much of the electric capacity required for the year 2000. However, the allowance trading system could inhibit the development of competitive bulk-power markets by limiting additional supply options. This is because new suppliers, without existing facilities, will not possess any of the offsets necessary to add new coal-fired capacity. Additionally, utilities possessing

the offsets necessary for growth might well be unwilling to sell them to potential competitors. These possibilities must be scrutinized. If not, this trading system will be the single largest impediment to competition in power supply.

NSP believes in competitive markets. However, the marketplace can work only with a level playing field. The allowance system being counted upon to encourage emissions trading could be an obstacle to achieve such competition because of the potential for hoarding of credits, the possibility that regulatory bodies will not allow or encourage trading, and the potential for utilities to refuse to trade with potential competitors.

B. Cost-Sharing

Another contentious issue associated with acid rain legislation is cost-sharing, or subsidization. NSP has not seen any cost-sharing alternative that the company could support. We regard them as simple subsidization and, in effect, double taxation of our customers. As mentioned, our company has invested more than \$600 million in pollution control since 1970. These investments have long been factored into the prices our customers pay. We thus view cost-sharing as an equity issue.

Many utilities are in a position similar to NSP. Some have invested in scrubbers; others have converted to low-sulfur coal to achieve low system-wide emission rates. And such utilities generally agree that the generating units primarily responsible for acid rain causing emissions must bear the cost of clean-up. Advocates of cost-sharing should be reminded that clean-ups under environmental laws such as the Clean Air and Water Acts and the Resource Conservation and Recovery Act (RCRA) are financed by the polluter based on the principle of polluter pays. A utility also bears the cost of decommissioning its own nuclear plants. Acid rain legislation should be similarly designed.

In summary, our company and, we believe, our customers view cost-sharing as unfairly requiring our citizens to pay twice to reduce acid rain causing emissions.

C. Clean Coal Technologies

Clean Coal technologies allow use of the nation's vast coal reserves while minimizing impact on the environment. NSP believes Clean Coal technologies are a viable way to lower emissions that contribute to acid

deposition, improve electrical efficiency and minimize cost. The provisions in the Clean Air Act amendments that allow for the further development of these technologies will allow utilities more options which will encourage rather than frustrate emission reductions.

Some Clean Coal technologies are commercially available today. NSP has been developing a Clean Coal technology since 1980 in pursuit of its commitment to reducing emissions. Our French Island plant was converted in 1981 to an atmospheric fluidized bed combustor (afbc). It was the first full-scale commercial afbc in the United States. This work was in preparation for the 130 megawatt afbc conversion at the Black Dog plant.

NSP believes it has unique experience and practical expertise in fluidized bed boilers. A subsidiary, NRG, was formed to market that experience in the form of a "reference plant" design for a 200-400 megawatt fluid bed combustor. The reference plant is a commercially available Clean Coal technology that results in reduced SO₂ and NO_x emissions while utilizing coal at improved efficiency.

Clean Coal technologies are a welcome addition to the methods used to combat acid deposition. Clean Coal technologies offer an incentive over conventional removal methods in that they can use the nation's abundant coal reserves at higher efficiency. Clean Coal technologies are and will play an important role in reducing SO₂ and NO_x emissions and maintaining an adequate, reliable supply of electricity.

The legislation currently being debated by the House and Senate mandates that the Federal Energy Regulatory Commission (FERC) provide incentives which would encourage Clean Coal technology, including incentive rates of return and 10 to 20 year amortization schedules. However, because FERC only has jurisdiction over wholesale electric rates, any such incentives would apply to only about 10 percent of the capital investment in Clean Coal technologies. It must be remembered that PUCs have responsibility over retail rates comprising approximately 90 percent of utility revenue requirement. Therefore, if incentives are not provided at the retail level, the incentives will not translate into increased development of Clean Coal technologies to reduce SO₂ emissions.

D. Air Toxics

NSP believes that air toxics emissions is an area of potential concern, one that requires additional study, as outlined in Title III of the administration's

bill. Specific control measures are not justified at this time, given the minimal amount of available information on actual emissions and health risks. Meanwhile, we will be among the first utilities to test for air toxics emissions at our major generating facilities and assess their potential impact on the environment. We plan to initiate this testing in 1990.

IV. CONCLUSION

We have discussed but a few of the issues important to NSP in the ongoing acid rain debate. We appreciate the opportunity to present them here and would like to continue working with the members of this committee to resolve the problems associated with the emissions trading system.

10/03/89

NORTHERN STATES POWER COMPANY'S
PRINCIPLES TO GUIDE THE PASSAGE OF
FEDERAL ACID RAIN CONTROL LEGISLATION

I. Federal acid rain controls to achieve nationwide reductions in SO₂ and NO_x emissions, reasonably and flexibly, are appropriate at this time.

Emissions of sulfur dioxide and other particulate matter generated by the combustion of fossil fuels which cause acid rain, do not respect state borders or utility service-territories. Recognizing the urgency of the problem, Northern States Power Company (NSP) invested substantially as long as two decades ago in SO₂ emissions control technology believing that an environmentally sound power supply cannot be separated from a reliable, least-cost supply of electricity. Today, seven progressive states have acid rain control laws in place (NSP's power plants are located in two of these seven states). These pioneering efforts have proven that electric power vital to meeting our nation's societal and economic goals, can be generated cleanly and cost-effectively. Proven technology exists to reduce acid rain-causing emissions. It is time to apply this experience and commitment at the national level.

II. A Federal acid rain program should be farsighted, balancing realistic and attainable reductions with the nation's 21st Century energy needs.

Environmental protection is strongly supported by Northern States Power Company. NSP's past investments to mitigate acid rain-causing emissions have brought about a system emissions rate average of .54 lbs. SO₂/MBTU, well below the strictest 21st Century rates mandated by any pending proposal. However, economic growth often demands the addition of electric generating capacity. Prudent Federal acid rain legislation must recognize these sometimes conflicting goals and reconcile them in the national interest.

Today's acid rain proposals must be crafted with a careful eye toward tomorrow's energy needs in order to achieve societal goals of economic growth. Signs of electric power shortages are clear: throughout the Northeast and Mid-Atlantic states reserve margins

are at far lower levels than industry standards, with "brownouts" increasingly common. Recently the Pennsylvania-Jersey-Maryland (PJM) Power Pool reduced voltages; the New England Power Pool (NePool) set new demand records, and New York State's requiring new capacity to meet load growth five years earlier than anticipated.

Continued economic growth will demand that electric utilities continue to provide customers a least-cost, reliable supply of power. With nuclear plants at a standstill and the price of natural-gas subject to fluctuations and reserves uncertain to meet load growth, and conservation and renewable resources only able to achieve so much, coal remains the fuel-of-choice for many utilities to meet their capacity requirements. Yet, a new idea gaining momentum is to mandate that those seeking to add new coal-fired capacity achieve a tonnage reduction of SO_2 from existing facilities, or retire a facility equivalent to the emissions of a new facility. NSP believes that acid rain legislation must not prevent the addition of new coal-fired electric generation. We support fuel neutral legislation which does not discriminate against the use of any generating source.

Such a 100-percent offset requirement would not only deter the timely construction of new generating capacity; it would particularly penalize those utilities which, like Northern States Power Company, have substantially reduced their emissions prior to an arbitrarily established baseline year. Thus, to acquire offsets to add new capacity, NSP would have to reduce its emissions from existing facilities which might not be able to be achieved cost effectively given our current .54 system wide rate, or retire a unit. This would not create the necessary offsets needed to add new capacity. If neither of these options were feasible, clean systems like NSP would be required to buy offsets from others to build a new plant. The systems in the South and West of the U.S. currently experiencing rapid economic growth, will be particularly hard-pressed to find the offsets necessary to add new capacity.

III. A Federal acid rain program should appropriately credit the early, pioneering steps of these utilities and states, and the costs borne by their ratepayers.

As a Federal policy is structured, great care must be taken to ensure that utilities and their ratepayers are not penalized for past investments made to mitigate SO_2 emissions.

A. An emissions allowance system must be equitable, and not penalize clean utilities by use of an arbitrary baseline.

Some current legislative proposals would achieve mandated reductions of sulfur dioxide and nitrous oxide by issuing "emission allowances" to affected sources (power plants); the level of these allowances would be calculated, in part, according to the SO₂ emissions rate of the source in a certain arbitrarily set baseline year. The allowances would be the level of emissions that utilities could emit per year. These allowances could be transferred to utilities in a state or between units of an interstate utility system in Phase I of the initiatives and among utility systems in two geographic regions in Phase II. The objective of such trading is to provide a market-based approach to attaining mandated reductions at the least-possible cost (while also giving every source an economic incentive to go beyond what is required and attain the maximum reduction possible). Such an allowance system utilizing market forces to achieve reductions of SO₂ and NOX appears to have significant merit, *provided* the system does not discriminate against those utilities which made significant investments in emissions reduction prior to the baseline year. Those systems which have low emission rates might have to purchase allowances from those holding such allowances, if clean systems needed to add capacity.

Such a system could concentrate trading allowances in the hands of those systems which are today's largest polluting sources, potentially granting a monopoly to those who would hold the greatest number of allowances after achieving the reductions mandated by legislation. This would enable such systems to dictate where future power plants are built. This could cause a dislocation within the electric power industry which would wholly undermine the intent of the allowance-trading system. Additionally, it is not clear that State Public Service Commissions would permit the transfer of such allowances believing them necessary to achieve growth in their own states in the future.

B. Neither utilities nor their ratepayers should pay twice for cleaner air.

Since 1970, Northern States Power Company, its ratepayers and shareholders, have invested over \$340 million in pollution-control technology to mitigate acid rain-causing emissions; 30 percent of Northern States Power Company's newest plant's

construction cost is attributable to state-of-the-art SO₂ and NOX controls. The cost of this commitment has long been factored into our customers rates in our service territory. Simple fairness dictates that the cost of complying with new, Federal acid rain control requirements be borne by the polluting states. Proposals calling for subsidies and "cost sharing" to finance acid rain control programs would actually impose an indiscriminate tax on all ratepayers, especially discriminatory and burdensome for those who have already paid the acid rain control bill in their own states. Essentially, these ratepayers would pay twice, solely because their state governments and utilities recognized and responded to the problem first.

**NORTHERN STATES POWER COMPANY'S
PRINCIPLES TO GUIDE THE PASSAGE OF
FEDERAL ACID RAIN CONTROL LEGISLATION**

Summary of Key Points

- I. Northern States Power Company believes it is now appropriate to establish a national emissions-reduction program, providing the flexibility to attain reductions in acid rain causing emissions cost-effectively. This nation can afford a sensible acid rain control program.
- II. A national program must not penalize a utility which has substantially reduced its SO₂ emissions voluntarily. Utilities with low systemwide averages must be provided with sufficient flexibility to add new generating capacity. National policy must not reward those who have delayed cleaning up their facilities by providing them with offsets necessary to add new capacity. They would be granted such offsets by reducing SO₂ emissions only after federal legislation required such reductions.
- III. Those utilities and states which have led the nation in achieving reductions of acid rain causing emissions should be properly credited in a Federal program, not penalized by the use of arbitrary baselines. Nor should their ratepayers be forced, through cost-sharing, to pay twice for acid rain control simply because they recognized and responded to the problem first.

Statement of
James E. Rogers, Jr., Chairman and Chief Executive Officer
Public Service Company of Indiana
Concerning
Acid Rain Legislation
Submitted for the Record to the
Subcommittee on Environmental Protection
of the
Senate Committee on Environment and Public Works
October 4, 1989

Mr. Chairman and distinguished members of the Subcommittee, I am James Rogers, chairman and chief executive officer of Public Service Company of Indiana (PSI). I thank you for the opportunity to present PSI's views on the critical issue of acid rain legislation.

Public Service Company of Indiana is an investor-owned utility that provides electric power to 69 of Indiana's 92 counties. We serve 570,000 customers, including 500,000 residential, 67,000 commercial and 2,700 industrial customers. Our commercial and industrial customers employ approximately 1.5 million people in our service territory.

PSI has been working for several months with both Congress and the Administration to help shape legislation that addresses the nation's concerns about acid rain. In fact, in addition to our own analysis, we are working with EPA's contractor, ICF, Inc., to develop cost and rate impact projections under various emission reduction scenarios.

It is our hope that any acid rain legislation enacted by Congress be fair and further a sound national energy policy.

Under any scenario, PSI and its ratepayers will have to make substantial investments to reduce power plant emissions. As a representative of the interests of both PSI's shareholders and PSI's ratepayers, I ask that this Subcommittee and other members of Congress scrutinize proposed acid rain legislation to ensure that its terms provide an equitable solution to the problem.

We recognize that large coal-fired utility plants contribute to the nation's inventory of sulfur dioxide. But these plants are not the only source of sulfur dioxide and, therefore, should not be required to bear the full cost of compliance. We believe it is unfair to burden our ratepayers with a substantially disproportionate share of the clean up responsibilities.

In the last decade, our company has worked hard to reduce our sulfur dioxide emissions. Since 1980, we have cut SO2 emissions by 22 percent and reduced our overall emissions by 110,000 tons per year. Indiana's new state implementation plan will result in even deeper reductions at our facilities, regardless of future congressional action. Our Gibson 5 scrubber is one of the nation's most efficient, winning a 1987 EPA award for outstanding operation.

And a point I'd like to emphasize. We've heard a lot about the so-called "dirty Midwestern utilities". Well, Mr. Chairman, Public Service Indiana has been in compliance with the current Clean Air Act, is in compliance with the current Clean Air Act and, I can promise you, will be in compliance with the new Clean Air Act.

PSI is also working to develop new technologies that will allow the continued use of U.S. coal resources - specifically high sulfur coal - while minimizing the adverse environmental consequences. We recently submitted a proposal for DOE funding to undertake an innovative clean coal technology project at our Wabash River station. We feel the development of clean coal technologies it is vital to the continued use of millions of tons of domestic coal reserves.

COSTS OF COMPLIANCE

Under S. 1490, as proposed, PSI will be required to reduce its current SO2 emission rates by more than two-thirds. PSI anticipates that it will bring its facilities into compliance by constructing five scrubbers on major coal burning units. Each of these scrubbers is expected to cost in excess of \$200 million. Our total capital expenditure for scrubbers and low NOX burners will be \$1.4 billion. When the costs of operation and maintenance are added to the annualized capital costs, PSI's annual revenue requirements will increase by more than \$400 million in 2001 on a baseline revenue requirement of \$2.1 billion.

Let me explain why PSI will likely choose scrubbing as our compliance strategy. First, PSI, like many utilities, has long-term contracts with its coal suppliers. In some

instances, these contracts can be modified before the term is expired. But, often, the utility must pay substantial penalties, at a great cost to the ratepayers. Second, PSI's choice of coal is constrained by the design of its electricity generating units. For example, certain low sulfur western coals cannot be burned in our units because of incompatible ash fusion temperatures and other chemical and combustion characteristics. Finally, PSI is the largest purchaser of coal from southern Indiana - the very region it serves. The economic viability of the communities in which PSI's customers live and work is closely tied to local mining operations. These are important considerations that my company must weigh in choosing a compliance strategy.

PSI estimates that the cumulative rate impact of Clean Air Act compliance under S. 1490 will be 25 percent by the year 2001. Independently, the state of Indiana estimated the cumulative rate impact for PSI customers will be 21 percent. And, preliminary numbers from ICF (which exclude the elasticity component) indicate our rates could increase by as much as 18 percent under S. 1490.

Put simply, this means a significant increase in the electric bills of our customers. The typical residential consumer, with a monthly bill of \$50, will face an increase of \$10 to \$12 per month, or an annual increase of \$120 to \$150. These increases will impose great personal hardships on low- and fixed-income households.

Moreover, this rate increase means higher unemployment for Indiana. The state of Indiana estimates that more than 20,000 jobs will be lost or adversely affected because of rate increases caused by this bill.

Further, Indiana and the region face serious losses in mining and mining-related employment if S. 1490 is enacted in its current form. The United Mine Workers of America estimates this loss at between 22,000 and 30,000 jobs and Administrator Reilly, has acknowledged that S. 1490 will cause the loss of 17,000 mining jobs in the region. The state of Indiana estimates that more than 1,500 jobs would be lost in the state alone, even assuming that Hoosier utilities will comply primarily by installing scrubbers rather than by fuel switching.

Congress should not ignore the impact this bill will have on human suffering even if it tends, at least initially, to be regional in scope. In the past, Congress has recognized that national problems must be solved with national solutions; that today's unemployment in Indiana, Ohio or Illinois may well become tomorrow's national economic recession.

INEQUITY AMONG POLLUTERS

S. 1490 requires that Indiana and several other states make far more than their fair share of emission reductions at their own expense - a repudiation of the principle that Americans work together to solve national problems such as acid rain. For example, Indiana contributed 7.5 percent of the nation's SO₂ emissions in 1980, but it is asked to make 11.8 percent of the required emission reductions under S. 1490.

As it now stands, the acid rain title is inconsistent with the "polluter pays" principle espoused by its supporters. "Polluter pays" does not simply mean that some polluters pay. It means all polluters pay. And, I would argue that all polluters should pay in proportion to their emissions.

Under S. 1490, however, not all polluters are required to pay. Industrial sources are required neither to make reductions themselves nor to contribute to the cost of emission reductions made on their behalf by others. Utility plants smaller than 75 megawatts also escape making or paying for emission reductions.

It may be that the goal of reducing SO₂ emissions by 10 million tons can be achieved most inexpensively by exacting all reductions from large utility plants because of economies of scale. EPA has argued as much. But there is no need to sacrifice equity to achieve efficiency. PSI is willing to make more than its share of reductions at its plants if that will minimize the national cost of clean air. But, PSI's ratepayers should not be required to bear the expense of making what are, in truth, someone else's reductions. It is fundamentally unfair to require us not only to make the lion's share of the nation's reductions, but to pay the entire cost while others who also contribute to the acid rain problem pay nothing toward its solution.

Acid rain is a national problem. The United States has committed as a national priority to reduce the trans-frontier drift of acid rain precursors into Canada. The cost of achieving this national goal is properly borne in part by all Americans. Let me be clear, however, that we are not suggesting we should escape from having to clean up our share of the excess emissions. We ask only that we not be required to pay the cost of eliminating others' shares of this national concern.

INDUSTRY'S RESPONSIBILITY FOR ITS SHARE OF THE PROBLEM

PSI supports a mechanism for allocating a fair share of the reduction costs to industrial sources of SO₂. Industrial sources account for roughly one-quarter of nationwide SO₂ emissions, but are not required to make any reductions under S. 1490. The "polluter pays" principle demands that these contributors to the acid rain problem contribute to the solution as well.

Several remedies might be considered. First, industrial sources could be required to reduce their emissions in proportion to their contribution to SO₂ emissions nationwide. Congress may decide to make a system of allowance trading available to industrial sources so that they can purchase utility-generated credits if credits are less expensive than making reductions at the industrial facilities. Assuming that the emissions cap is to remain in place for utilities, it should also apply to industrial sources. There is no justification for requiring utilities to hold down emissions while industrial sources are allowed to eat up environmental gains made by utilities and paid for by ratepayers. Concerns about burdens on very small industrial sources can be addressed with a small source exemption.

Furthermore, by exempting new industrial boilers from the Phase II cap on future emissions, S. 1490 will encourage new industrial sources to self-generate their electricity needs rather than pay for increasingly expensive central station power. That will leave residential customers to foot the bill. Unfortunately, this aspect of S. 1490 will not result in lower emissions, but will only move those emissions from large utility sources to many smaller industrial sources.

If the administrative burden of requiring industrial emission reductions is too great, a comparable result could be achieved by imposing an emission-based fee on industrial and small utility sources that are not required to make emission reductions themselves. Optimally, the amount of the fee would reflect the utilities' marginal cost in achieving the reductions that would otherwise be made by industrial and small utility sources. The fee would serve the dual purpose of giving industrial and small utility sources an incentive to make emission reductions, where cost-effective, and of assisting utilities that are effectively required to make excess reductions on behalf of industry and small utilities.

CRAFTING A FAIR COST SHARING REMEDY

PSI supports a cost sharing mechanism that encourages, but does not require, the use of flue gas scrubbers. Utilities will then have the freedom to choose the compliance techniques best suited to their situation. For example, Rep. Bruce's bill, H.R. 2909, would provide financial assistance for capital expenditures without requiring the use of scrubbers. Moreover, this solution can be constructed so as to encourage use of specified types of compliance investments, such as investments in conservation or clean coal technology.

There are a number of options for generating the necessary funds. Some have proposed very small fees on electricity generation, e.g., fees of one-half mill, or one-twentieth of a cent, per kilowatt-hour. Such a fee amounts to 50 cents per month on a typical residential bill - a trivial amount to pay for solving the nation's acid rain problem.

A fee on SO₂ emissions from both utility and industrial sources is perhaps most consistent with the "polluter pays" philosophy. Under this solution, utilities that use non-fossil fuel technologies, burn low-sulfur fuels, or invest in emission reduction technologies will not be required to "pay twice." Emitters would pay in direct proportion to their emissions. The fee would be set so that the revenues generated would equal the reimbursement needed to compensate those forced to make excess reductions.

ADDITIONAL ISSUES

PSI has several other concerns about the regulatory proposal put forth in S. 1490. First, PSI strongly supports the bubbling and emissions trading provisions of the bill. However, the steps in the required permit process, which mandates a written proposal and state and federal government approval for changes at individual units, could take many months. Those delays will impede full realization of the bill's cost saving, bubbling and trading provisions. A streamlined tracking process for allowance trading is needed for the desired new market system to work as efficiently as possible.

Furthermore, the bill should do more to protect the future value of allowances. As written, S. 1490 makes it clear that allowances are mere privileges, subject to cancellation at the whim of EPA. This falls short of the necessary assurances needed to support a commodity in an open market. The bill should specify those conditions which would require a change or limitation to future allowances.

Second, while the deadline for achieving Phase I reductions is not a problem for PSI, for many utilities it is very tight. If the law is enacted in the spring of 1990 and the regulatory process proceeds according to schedule, the utilities' compliance plans will probably be approved no earlier than the end of 1992. That would leave only three years for the design and construction of major scrubbing units. That will effectively prevent early (and hence, beneficial) emissions reductions for "banking" against Phase II reductions.

Third, while PSI applauds the clean coal technologies program, we suggest that the criteria for awarding grants be tied more closely to the specific problems of high-sulfur coal use. The impacts of the acid rain requirements will fall most heavily on the Midwestern higher-sulfur coal miners and the Midwestern ratepayers. We believe that the clean coal technology program should be focused especially on developing new technologies that will permit the continued use of the Midwest's substantial energy resources.

Finally, section 507(d) can be read to authorize states to enact laws barring utilities from using out-of-state coal. I would suggest that the nationwide costs of compliance could increase dramatically if states were allowed to protect their coal markets from competition. Our company's position is that flexibility and competition can work to hold down costs. We hope this provision can be deleted.

CONCLUSION

As with many pressing national issues, Congress must strike a balance. The balance here is between a clean environment, national energy policy and regional economic vitality. On the issue of cost sharing, however, neither the supporters nor the opponents are asking for environmental concessions. The key issues are fairness and adherence to a coherent national energy policy. Will a few utilities and their customers be forced to pay for making more than their share of the required emission reductions? Will they be penalized today for pursuing long-term investments that were legislatively encouraged for the past decade?

I thank you for the opportunity to submit this statement to the Subcommittee on behalf of PSI, its customers and investors. We all appreciate the attention this Subcommittee has given these issues and we look forward to working with you and the whole Congress to formulate an equitable solution to the acid rain problem.

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WEST
Western Energy Supply & Transmission
ASSOCIATES

STATEMENT OF
WESTERN ENERGY SUPPLY & TRANSMISSION (WEST) ASSOCIATES
REGARDING
"THE ACID RAIN CONTROL ACT OF 1989"

BEFORE
THE SENATE ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

Submitted:
October 20, 1989
Washington, D.C.

Mr. Chairman, Western Energy Supply & Transmission (WEST) Associates, a group of 19 investor-owned and municipal electric utilities covering some 19 million consumers in the West and the Southwest United States, appreciates this opportunity to provide comments on proposed "Acid Deposition Control Act of 1989" (Mitchell-Baucus bill).

This statement covers three basic areas:

1. A perspective on the clean air debate in the '80s
2. WEST Principles and the unique Western clean air situation
3. Areas of concern
 - A. Tax or fee
 - B. 1985 emissions rate restriction: penalizes western cleanup; ignores unique Western fuel, operating conditions
 - C. SO₂ offsets requirement for new generating units: forestalls needed generation in West without allowances to trade, precludes low sulfur coal option
 - D. Repeal of "percentage reduction:" little, if any, real Western benefit
 - E. NOx provisions: Low NOx burners versus SCR

1. PERSPECTIVE

For years now, WEST members -- who today operate over 40,000 megawatts of fossil fuel-fired power plants -- have been in the forefront of the Clean Air debate, with specific reference to acid rain. We have testified before Congress, advocating the Western electric utility perspective on clean air. We have sponsored among the most comprehensive scientific studies of the acid rain question in the West, and we have conducted some of the most important scientific research to date on the acid rain issue in the Rockies, Sierras, and elsewhere.

We feel it is quite significant, Mr. Chairman, that noted scientific experts have found no regionwide acid rain problem in the West.

The Mitchell-Baucus bill builds on past efforts to address the acid rain and clean air questions. While it is not a perfect bill -- there is no such thing --, it is the clean air bill in the Senate which represents the best opportunity to enact meaningful changes to the Clean Air Act.

Since discussions started over amendments to the Clean Air Act a number of years ago, WEST's perspective and principles have remained basically the same.

2. WEST PRINCIPLES/UNIQUE WESTERN CLEAN AIR SITUATION: A STORY OF PROGRESS

WEST has consistently advocated fundamental principles that any clean air legislation should follow. This legislation meets many, but not all, of those principles.

The longstanding WEST principles include:

- no national tax or fee to spread the costs of funding emissions controls
- "polluter pay" -- responsibility for cleaning up emissions (and paying for the cleanup) resting with those most responsible for pollution
- "freedom of choice" for power plant managers in meeting emissions standards (including fuel switching, use of low sulfur coal, or clean coal technology); this also means no mandated technology-based controls
- credit in any legislation for emissions cleanup/reductions already achieved

- basing legislation on air quality improvements to be achieved, not simply emissions reductions.

While there are two important areas of specific and serious concern, we are gratified that the bill does recognize to some extent the significant cleanup that already has been achieved in the West. However, since the 10 million-ton-reduction requirement is not linked to any specific air quality goal, we want to insure consideration of the fact that the West does not contribute to acid rain.

Western electric utilities and their ratepayers have invested significant amounts of money in clean air over the years. And ratepayers in the West pay a premium in their electric bills for their clean air. Between 1970 and the end of 1989, Westerners will have invested in excess of \$4.7 billion for emissions controls equipment on their power plants.

As a result, Western SO₂ emissions are currently at 1950 levels, roughly one half of 1970 levels -- and are expected to remain virtually level to the year 2000 (according to 1985 EPA estimates using 1982 U.S.- Canada data).

Importantly, Mr. Chairman, these emissions will stay that way because state laws in the West regarding SO₂ and NOx

emissions are generally more stringent than federal laws. In Arizona, for example, the statewide SO₂ emissions standard is nearly twenty percent stricter than the federal requirements. In California, utilities must meet SO₂ emissions limits that are eighty percent lower than the 1.2 lbs/mmBtu standard being considered in this bill.

These emissions also will stay that way because Western utilities use low sulfur coal in their power plants -- coal that has a sulfur content four, five and even six times less than that of Eastern coal. In addition, Westerners and their utilities have paid for additional SO₂ emissions control equipment (scrubbers) on many of their units which takes out 70-90 percent of the sulfur remaining in the coal.

So, Mr. Chairman, we take more out of less -- and we also use this pollution control equipment to scrub much more of our electric generation than the East.

The result of this cleanup effort is evident:

- The West has roughly one-tenth of the East's SO₂ emissions from all sources
- Western utilities account for only two percent of total nationwide SO₂ emissions

- Western utilities account for only four percent of total nationwide NOx emissions
- Studies demonstrate the absence of a scientific basis for an acid rain problem in the West. According to recent EPA studies, there is no evidence of lake acidification in the West, after surveying 719 lakes representing an estimated 10,393 lakes in the West. (Source: Characteristics of Lakes in the Western U.S., January 1987, U.S. E.P.A.)
- Another key study on acid deposition in the West, conducted by Dr. George Hidy of the Desert Research Institute and others, confirms the EPA study finding that regionwide effects of acid deposition do not exist in the West, and none are expected at current levels of exposure. "No credible scientific information -- either regionally or from specific sites -- suggests that present levels of deposition are acidifying any sensitive high elevation water bodies in the West." (Source: Acid Deposition and the West, March 1986, Dr. George Hidy, et. al. Executive Summary, page 7.)

While we generally approve the thrust of this legislation, WEST strongly believes there are areas where the bill can and should be revised.

Importantly, we see our concerns as efforts to improve, not weaken, the bill, while keeping its principles intact and preserving its environmental protections.

3. SPECIFIC AREAS OF CONCERN

A. SO₂ Provisions: No Tax or Fee

First, regarding the bill's SO₂ proposals, we are delighted that Majority Leader Mitchell and Subcommittee Chairman Baucus have not included any direct fee or tax on Westerners to fund an SO₂ emissions cleanup on existing power plants in other regions. Similarly, we are pleased that the House Subcommittee on Health and the Environment also has not included any direct fee or tax.

WEST has consistently and vehemently opposed suggestions for a national tax which both penalizes Westerners who have already paid to reduce SO₂ emissions and subsidizes higher SO₂-emitting regions which have not made such reductions.

There are four reasons why any acid rain legislation should not tax electric consumers in the low SO₂-emitting West to provide subsidies to electric utilities in other areas which have not reduced their high SO₂ emissions.

1. Westerners have already paid to clean up their emissions.
2. Taxing Westerners to pay for a cleanup elsewhere violates "polluter pays."
3. The tax is inequitable and unjustified -- because the higher SO₂-emitting coal-using states (generally outside of the West, but in the Midwest) tend to have residential electric rates lower than the national average.
4. Such a tax amounts to a "double whammy" for Western citizens because it hurts the economies and competitiveness of their areas.

It is noteworthy that the Administration, in offering H.R. 3030, has already rejected the idea of taxing electricity customers all over the country to subsidize an air pollution cleanup in certain other areas. H.R. 3030 has more than 150 cosponsors in the House. The 25 Senate cosponsors of S. 1490

also have endorsed the Administration's approach which does not tax electricity customers.

Even a tax of just one-twentieth of a cent per kilowatt hour could cost Westerners nearly \$240 million each year -- and without benefit to the West. In fact, Westerners would be forced to pay 25 percent of the tax and receive zero benefit. A quarter of a billion dollars unduly diverted from the West to relieve polluters in other regions is simply untenable. Those funds, for example, represent one-quarter of the State of Arizona's annual operating education budget, grades K-12.

This is a price Westerners cannot and will not bear. We firmly oppose it.

The idea of such a tax becomes still more objectionable when one looks closer at three examples of the West's SO₂ emissions cleanup efforts -- particularly relative to the efforts in other areas of the country.

- The West uses costly SO₂ "scrubbers" on six times more of its coal-fired electric generating units than the East: nearly fifty percent of the West's units are scrubbed versus only eight percent in the East. In Ohio, for example, there are only two scrubbers on

110 coal-fired generating units. In New Mexico, by contrast, there are ten scrubbers on all ten coal-fired units in the state.

- The average Western SO₂ emissions rate is six times less than the average rate of the top ten SO₂-emitting states (in the East.) It is these ten states which account for seventy percent of all the SO₂ from coal-fired power plants nationwide.
- Texas and California are two examples of inequitable effects in the West of a proposed national tax on fossil-fuel generation. Texas, with a very low average SO₂ emissions rate of .8 lbs/mmBtu, would have to pay the largest tax bill in the U.S., and California, which has no coal-fired power plants, would have to pay the third largest tax bill.

In summation on this point, Mr. Chairman, WEST strongly urges Congress to resist efforts to subsidize cleanup in one area of the country by taxing people in another and to adhere to the longstanding "polluter pays" principle.

Cost sharing, it turns out, is the most controversial, most divisive of all possible approaches to the problem.

There are a number of alternatives -- less objectionable, less intrusive alternatives that could be considered. For example, tax exempt financing for pollution control devices would save considerable dollars and help offset rate increases. Another example is accelerated depreciation for new emissions control equipment to mitigate the burdensome cost impacts of revised SO₂ standards.

In any event, WEST will continue to oppose the national per-kilowatt-hour SO₂ fee or tax as it is unjust, inequitable and burdensome.

B. 1985 Emissions Rate Restriction: Penalizes Western Cleanup: Ignores Unique Western Fuel, Operating Conditions

In its Phase II provisions for SO₂, the bill will not require new SO₂ controls on power plants which have SO₂ emissions rates below 1.2 lbs/mmBtu.

Two hundred seventy-two of 275 generating units in the Western United States -- representing some 40,000 megawatts -- already meet the proposed SO₂ emissions rate of 1.2 lbs/mmBtu. This is a rate all utilities in the nation will have to meet, yet it also is one the West has been meeting for years. This cleanup success, clearly, is a result of Western utilities being

subjected to what amounts to the most stringent SO₂ standards in the nation.

"Class of '65" Problem

However, a major WEST concern is our belief that there needs to be a major improvement in the bill's provision to require that a uniform emission limitation be placed on all fossil fuel-fired power generation based on 1985 SO₂ emissions rates.

This provision biases fuel supply for power generation away from low sulfur and other types of coal, our nation's most abundant fuel, and could forestall building the needed future coal-fired electrical generation in the West. This could threaten the energy security of the region and country.

It also ignores unique fuel and operating situations that occurred in the West that year. For example, some California utilities in 1985 used as fuel for electric generation plentiful supplies of virtually sulfur-free natural gas (0.01 lbs/MMBtu). Some power plants were shut down for as much as six months in 1985 (Mojave Generating Station), and other utilities were using coals from seams that may have been unusually low in sulfur content.

The net effect is that the bill's provisions establishing for all time the 1985 emissions rate:

- Burdens operators with extremely harsh, restrictive and arbitrary operating standards, based on unique conditions in 1985;
- Wrongly presumes that the same fuel mix and operating conditions will and should always apply, year in and year out. They don't.

More specifically, the bill requires that any existing unit with an emission rate of 1.2 lbs/mmBtu or less must operate in the future at the same SO₂ emission rate as they operated in 1985.

Since all but three generating units in the West operated in 1985, and still operate, at or below a 1.2 lbs/mmBtu emissions rate, the impact of the 1985 emissions rate provision of the bill would be to freeze emissions rates on existing sources in the West at 1985 levels.

By setting the maximum emissions rate at 1985 levels, the bill also ignores the specific fuel availability and operating conditions experienced by the utilities in that specific year. If a unit was operating at a reduced capacity factor or for

economic reasons was using gas as a fuel in 1985, it would be precluded from increasing its emissions rate beyond that level, even if to do so would result in emissions below its state permit level, a likely scenario in the West.

Further, a 1985 baseline also would make oil- and gas-fired utilities a captive market for gas producers. Under the proposal, dual-fuel units will not be allowed to burn a greater level of oil than they did in 1985. This loss of competitiveness between oil and gas will result in significant increases in gas prices.

These provisions penalize Western utilities for being among the lowest emitters in the country and will have severe impacts on economic growth in the region. It is clear that Western utilities will have to build new electric generation to meet growth in population and industry. An eighteen percent growth rate in required generation is projected in the West by the year 2006. Conservation alone is not going to create the resources to meet this need.

Proposed Solution

We would recommend that sources below 1.2 lbs/mmBtu be allowed to operate at their state implementation plan (SIP) limits or 1.2 lbs/mmBtu, whichever is lower. This will be fair

treatment to those sources and states which have made progress toward reducing their SO₂ emissions rates.

C. SO₂ Offsets Requirement for New Generating Units:
Forestalls Needed Generation in the West Without Allowances to
Trade; Precludes Low-Sulfur Coal Option

The bill's provision requiring any unit placed in service after the year 2000 to secure 100 percent offsets for its emissions is obviously punitive for those systems, like those in the West, which are operating at already very low emissions levels. Western utilities would receive no credit for their history of clean generation and would not be granted emissions allowances for future coal-fired generation. Yet, these allowances, as noted above, are needed to build or expand power plants to provide the needed future generation in the West.

Theoretically, these allowances could be bought from Eastern plants. WEST strongly believes, however, the necessity of Westerners having to look east for allowances further violates the "polluter pay"/no-subsidy principle because low-sulfur emitting Western plants would be forced into buying emissions allowances from higher sulfur-emitting power plants, many of which failed to clean up emissions in past years.

The 100 percent offset requirement for new sources encourages operators to hold excess allowance for future use, rather than making them available in the utility marketplace. Indeed, the National Association of Regulatory Utility Commissioners and others have testified that state regulators in the East probably would not allow the utilities to broker or jeopardize their own future needs by "selling" allowances. Consequently, from a practical standpoint, the specific approach of "allowance trading" just won't work. For the West, the concept amounts to a fallacy.

A further significant difficulty is that the bill precludes obtaining needed allowances for new units by shutting down or retiring existing units, if that existing unit is cleaner than 1.2 lbs/mmBTU. For the West, this provision is senseless, additionally burdensome and counterproductive.

In the West today, more than sixty percent of the generating units (and capacity) are "pre-NSPS" units (for which construction began before September, 1971). These already low sources of SO₂ emissions may approach the end of their lives sometime after the first decade of the new century. Their retirement could make room (emissions-wise) for the needed new generation. The bill prohibits this.

In short, the need is to allow for future generation growth in the West. The bill in its current form does not permit this.

Proposed Solutions

We would recommend that the bill be amended to allow very low-emitting sources to be constructed without an offset requirement. The bill should specify a de-minimus level (i.e., .5 lbs/mmBtu) below which sources need not purchase allowances. This is to encourage the development of clean sources that will emit sixty percent less than required by the New Source Performance Standards (NSPS).

We recognize that such a provision may result in a small increase in emissions. However, most of that increase will be in the West where there is no evidence of the acid rain problem, and projected large population growth.

D. Repeal of "Percentage Reduction": Little, If Any, Real Western Benefit

While WEST is pleased that the bill proposes to repeal the existing Clean Air Act requirement that all new-source fossil-fuel electric generation remove 70-90 percent of sulfur emissions via "scrubber" technology -- regardless of whether low

sulfur coal is used, the fact is that this would provide few, if any, benefits to the West.

Western power plants still will have to meet state emissions limits that often are stricter than federal levels. Other provisions of the Mitchell-Baucus bill, regarding the 1985 emissions rate limit and new plant emissions offsets, would practically mean "scrubbing" in most, if not all, cases.

Further, Best Available Control Technology (BACT) and PSD provisions in the Clean Air Act would continue to mean emissions levels which likely cannot be achieved without scrubbers.

E. NOx Provisions: Low NOx Burners v. SCR

The legislation requires NOx reductions to be made for the year 2000 and establishes emissions rates of .4 lbs/mmBtu for tangentially-fired boilers and .5 lbs/mmBtu for wall-fired boilers.

WEST is very concerned both about the proposed NOx reductions and the establishment of the NOx emissions rates for wall- and tangential-fired boilers. It is likely that these rates and levels of reductions cannot be met by using such proven existing technology as low NOx burners alone. Instead, the

reductions may require imposition of selective catalytic reduction (SCR) technology.

Approximately twenty percent (or 44) of the 200 total wall- and tangential-fired boiler units in the West will be affected by the bill's proposed emissions rates for NOx. The costs could be several hundred million dollars.

While WEST prefers "freedom of choice" in achieving emissions reductions via the most cost effective means, WEST believes low NOx burner technology is, of all the possible technology options, the most cost effective -- and it is presently available. WEST members have experience with low NOx burners. It is noteworthy that this technology costs eight times less than post-combustion control technologies such as selective catalytic reduction (SCR). SCR also has not had wide commercial demonstrations on large-scale power plants in the United States.

The age of units and type of coal burned also affect the ability to meet a NOx emissions level. Each boiler is different, each seam of coal varies. We recommend that a more realistic approach would be to establish a national tonnage reduction goal based on air quality needs, and to direct the Administrator to select the most cost effective compliance strategy, taking into account the age and the type of the unit to be controlled.

CONCLUSIONS

Mr. Chairman, WEST supports many of the provisions in this legislative proposal. WEST utilities have done the things necessary to control SO_2 and are proceeding with further improvements in NOx emissions.

However, modifications in the proposed SO_2 offsets requirement, 1985 emissions rate and NOx provisions are needed to assure that Western utilities can continue to provide adequate electric supplies to residents in the West.

WEST does pledge its continuing efforts to work with Congress to meet these goals.



CLEAN AIR ACT AMENDMENTS OF 1989

ACID RAIN

MONDAY, OCTOBER 9, 1989

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Billings, MT.

The subcommittee met, pursuant to notice, at 11:00 a.m., in the Lewis and Clark Room, Student Union Building, Eastern Montana College, Hon. Max Baucus (chairman of the subcommittee) presiding.

Present: Senator Baucus.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Good morning. It is a pleasure to be here today, particularly with the great weather. It has not been bad in Washington, D.C. either the last few days, although it has been much cooler than here. I am particularly happy to be here in my own State to hear testimony from folks regarding acid rain legislation and to discuss the different bills before the Congress. This hearing was planned some time ago; but, in addition, the Governor wrote me a letter endorsing the President's acid rain bill when it was announced and also suggesting to me that I hold a hearing in the State. So, in part, I'm holding this hearing at the request of the Governor.

As you all know, the acid rain debate has been going on for almost a decade. It has been one of the most politically heated debates that the Congress has faced in some time. It has pitted region against region in America. For example, President Reagan was very much opposed to acid rain legislation. He felt that more time and more study was needed. The former majority leader of the United States Senate, Robert Byrd, also opposed acid rain legislation for many years, primarily respecting the wishes of some high sulphur coal States, particularly West Virginia. The new majority leader, George Mitchell, in the past very strongly wanted acid rain legislation basically because problems associated with acid rain were most directly felt in New England States as well as in Canada. Then the midwest States were somewhat in favor of acid rain legislation only as long as there was cost-sharing. They wanted someone else to pay for cleaning it up. I am reminded of a

comment I heard from former EPA Administrator Bill Ruckelshaus who said that after talking with a member of the House or the Senate for 5 or 10 minutes about acid rain legislation, he could tell what part of the country that person was from. That indicates just how deadlocked the Congress was and that was the case for many years.

The political landscape has dramatically changed in 1989, essentially because we have a new President, President Bush, who very strongly favors—in fact, is pushing aggressively—the passage of acid rain legislation. That is a major change. In addition, the new majority leader, Senator Mitchell, previously supported acid rain legislation, and as he is now the majority leader, it is more likely that there will be acid rain legislation passed.

On top of that, House Speaker Tom Foley strongly favors the passage of acid rain legislation. In fact, they all are in favor of clean air legislation this year, clean air legislation which includes not only acid rain but urban smog—basically the carbon monoxide and ozone non-attainment problems associated with most urban areas around the country—and air toxins. Those are the three major components of any clean air act and it is clear that this Congress—maybe not this year—will pass a clean air act, including acid rain, for the reasons I just mentioned.

As you well know, some prior acid rain proposals have not been exactly helpful to the west. There is a provision in current law called the percentage reduction which is particularly harmful to the west insofar as it requires all utilities to reduce their SO₂ emissions regardless of the coal they secure. In addition, other acid rain bills have included cost sharing; putting perhaps a tax on power production Nation-wide, that revenue then going to midwest utilities, which are the biggest polluters, to help them clean up. Obviously, cost sharing is anathema to us in the west. We've paid for cleaning up our utilities. Colstrip Units No. 1, No. 2, No. 3, and No. 4 are among the cleanest utilities in the country, emitting in some cases as low as 0.08 pounds of sulphur dioxide per million BTU and up to maybe 0.6 or 0.7 pounds per million BTU, compared with a lot of midwestern utilities which emit 5, 6, 7, 8, and maybe more pounds per million BTU. This means that our utilities are in some cases 100 times cleaner than those in the midwest. So cost sharing just did not make sense.

President Bush has gone a long way. He has suggested that Congress pass legislation which I think is more favorable to the west than prior bills. It is more helpful to the west than any other bill, as a matter of fact. However, I don't think that legislation goes far enough to level the playing field across the country. I, therefore, am about to introduce legislation in conjunction with the Majority Leader, Senator Mitchell, which I believe will go much further to protect the west, to make sure that in fact we do have a level playing field. We in the west do not want to take an unfair advantage of other people in the country. We also do not want other parts of the country to take unfair advantage of us. We want an even, level playing field. That's what I hope the bill I introduce accomplishes.

The subject of today's hearings is to comment on the President's bill, my bill, and other bills.

The improvements in my bill are as follows:

One, I repeal percentage reduction. I persuaded Senator Mitchell to go along with repeal of the percentage reduction requirement which is currently in the law and is very unfair to western low sulphur coal States.

Two, I give a credit for clean States. States where 50 percent of their effort is accomplished by scrubbing are exempt from the provisions in the Bush legislation that require States by the year 2000 to have emissions back at their 1985 levels or at 1.2 pounds, whichever is the cleaner. Anyway, I give a credit for clean States.

Three, I also provide for an opt-in for utilities. That is a dirty utility can get credit immediately for reducing emissions before the year 2000. It can seek allowances early on for work that it undertakes to reduce emissions before the year 2000. That's not contained in the President's bill. There are other provisions as well.

Both the President's bill and my bill have a cap on emissions after the year 2000. Why is the cap there? The President put the cap in his bill for two reasons. First, it is to get a true reduction in sulphur dioxide emissions. Currently the United States emits about 20 million tons of sulphur dioxide a year, that's down from about 23 million tons of sulphur dioxide a few years ago. The National Academy of Sciences did a long study on sulphur dioxide emissions in the United States and it concluded that to begin nature's natural process of restoring lakes and rivers and streams in our country there would have to be a 50 percent reduction in sulphur dioxide emissions. We've gone from about 23 million tons down to about 20 million tons. That is why previous legislation had a 12 million ton reduction. The President's bill includes a 10 million ton reduction in sulphur dioxide emissions by the year 2000 and mine also calls for a 10 million ton reduction. But the cap is there so that there can be a true 10 million ton reduction using 1980 as a baseline, which both bills have as a baseline.

The second reason for the cap is to assure that the trading allowance system works. As many of you know, the President proposes, as I do in my legislation, a trade allowance system whereby a utility can grow and increase its production so long as it is able to secure a credit from some other utility that has reduced its emissions. In a sense, it is a zero sum gain, not entirely but in a sense. The trading allowance system probably won't work if there is no cap.

I very much understand the concerns of many folks that a cap will impede and inhibit growth. I have included several provisions in my legislation which offset that, which we will go into a little bit later. I think that the cap is necessary if the trading allowance system is going to work. Many in the utility industry have previously wanted a trading allowance system for maximum flexibility and, frankly, as I see it, if there is no cap then there is no trading allowance system.

Finally, if there is going to be a bill, one has to ask oneself, what is the alternative? The alternative is probably going to be some system of mandated reductions as exists currently in many areas. I'm not sure that the utility industry wants that as an alternative. But because President Bush is so firmly committed to a true 10 million ton reduction and because I think that's very much where the Congress is, if we don't like the cap, we have to ask ourselves

what's the alternative and is the alternative better or worse. That's the basic question.

Let's get on with the hearing. There is a lot that we have to flesh out here. Again, I want to say to everybody that we in our State don't want to take advantage of other folks in the country, but we also don't want them to take advantage of us in the west. It is my belief, and it is also my hope and intent, that the legislation we're discussing today—essentially the bill that I've introduced along with Senator Mitchell—does accomplish that goal and that purpose. That's important because there will be legislation passed in this Congress. And if there is legislation passed in this Congress, we want legislation passed that is fairest for all concerned.

We're honored to have a representative of the Governor here. As I mentioned earlier, I responded to Governor Stephens request by holding this hearing. I know that he'd like to be here but he has another commitment and is unable to do so. In his place, we have Art Wittich from the Governor's Office.

Before I begin let me remind everybody that we have seven witnesses today. I'm going to ask witnesses to hold their testimony down to seven minutes. Those of you who have testimony that you want to give, I ask you to submit your testimony for the record so that we can concentrate on the acid rain bills before the Congress.

Art, why don't you proceed?

STATEMENT OF ART WITTICH, SENIOR POLICY ADVISOR FOR MINING, ENERGY, AND ENVIRONMENT, OFFICE OF GOV. STAN STEVENS

Mr. WITTICH. Thank you, Senator. For the record, my name is Art Wittich. I am the senior policy advisory on mining, energy, and the environment to Governor Stan Stephens of Montana. I am here today speaking on his behalf.

The Governor regrets that he cannot be here today but he is on a previously scheduled trade mission to the Orient. He appreciates your willingness, Mr. Chairman, especially with your busy schedule, to respond to his request of holding a field hearing in Montana on this very important subject.

Environmental protection is of paramount importance to us all, and certainly to the Stephens Administration. The concern for air quality is increasing, especially in those urbanized areas of the country where the air is severely polluted. Addressing the potential threat of acid rain has the public support and this committee is to be commended for its efforts on this matter.

While there is evidence of acid rain in other parts of the country, the Big Sky State is blessed with an abundance of clean air but we also need economic activity. The availability of reasonably priced electricity will be crucial to Montana's growth. All sectors of our economy—agriculture, mining, forest products, and tourism—demand electricity and will require reliable supplies in the future.

Acid rain is many things to many people. Scientists, not to mention policy-makers, disagree on the cause, effect, scope, and even presence of acid rain. However, all would agree that the State of Montana is not part of problem, but poised to be part of the solution.

Coal-fired electricity generated in Montana could improve the air quality in many of the urbanized areas of the United States. And, unless the country desires more nuclear power plants, America's—and Montana's—abundant coal resource will be crucial to the Nation's energy needs. While we are attempting to rectify some localized air problems, overall, Montana's clean burning utility facilities, clean coal reserves, and clean air sheds are all an opportunity for the Nation today and into the future.

During the acid rain policy debate, three goals should be kept in mind. The first is that air emission controls should be achieved using market-based solutions. In this way, the environment will be protected in the most efficient and cost-effective manner possible. The requirement of mandatory scrubbers ignores the obvious opportunity for utilizing the west's vast low sulphur coal reserves.

The second goal should be to implement the "polluter pay" principle. It is patently unfair to penalize those companies and utility rate payers that have invested in expensive emission control devices by now requiring them to pay for the clean up of dirty facilities in other regions. The imposition of a national utility tax—or any other cost-sharing mechanism which subsidizes the heavy polluters—is simply unacceptable. Their conscious decision to burn high sulphur coal in generation facilities lacking adequate emission controls was a gamble they entered into and for which they now must be held accountable.

The third goal is often overlooked but just as important as the above two. This goal is economic growth and development. While cleaning up the Nation's air resources is vitally important, we should be cognizant of the effect on future economic growth. While the scientific benefits of additional strict air pollution controls are sketchy at best, we must proceed cautiously in mandating expensive control requirements. It would be a tragedy if the acid rain bill results in the export of industrial and manufacturing jobs overseas, especially if the environmental benefits are marginal, at best.

The recognition in both President Bush's proposal and the Mitchell-Baucus proposal of the first two above stated goals is commendable and has my strong support. The acceptance of these concepts in the acid rain debate is a welcome change. However, somewhat insufficient attention has been paid to the third goal in the legislative drafts of both bills.

Before proceeding, let me encourage you to utilize the scientific evidence at your disposal. Facts and data are crucial in formulating public policy. Arbitrary lines are already being drawn on what sources are being regulated, the amount of tons of reduction, and when the emission caps take place. While effective legislative drafting necessarily requires specific times and standards, regrettably, all of these lines are being drawn prior to the conclusion of the Federal NAPAP study.

In any event, even though some scientists disagree on acid rain, almost all agree that acidic precipitation is caused by high concentrations of SO_2 and NO_x . Therefore, the Rocky Mountain West in general, and Montana in particular, can help solve the national acid rain problem. While the Mitchell-Baucus bill recognizes this to some extent under the clean States credit provisions, emission caps are still imposed on Montana's existing and potential generation

facilities after the year 2000. Science should be utilized in any Federal acid rain legislation.

As to specific legislative analysis, the clean air proposal by President Bush was disclosed with much fanfare. On its face, it was a welcome change from the emphasis of previous years concerning national cost-sharing mechanisms and mandatory scrubber requirements. However, upon inspection of the actual legislative language, certain problems arose under the Bush proposal. Even though the offset purchase provisions correctly incorporate a market-based approach to emission controls, it raises some cause for concern for States such as Montana.

The President's proposal also suffers by allowing for limited access to coal markets in certain States. To preclude the importation of coal raises grave concerns. If all agree that market-based solutions maximize efficiency, then let the market control. Montana, with vast low sulphur coal reserves, should not be penalized. Indeed, these reserves are needed to solve air problems in other States. Therefore, access to those markets is crucial.

While the Mitchell-Baucus proposal correctly reduces these market restrictions for coal, it is only somewhat better in providing for growth potential. The clean States credit is helpful but of limited significance due to the extremely clean burning nature of most of our existing facilities. The Mitchell-Baucus bill's inclusion of offset provisions similar to the Bush proposal, while being the correct approach to control emissions, may also de facto prevent the construction of future generation facilities in Montana due to the scarce availability of offsets. The allowance for clean burning facilities utilizing clean coal should be unequivocal.

The Mitchell-Baucus clean States credit, however, raises some concerns about national cost-sharing. The reduction from 106 to 20 affected plants should not be encumbered by any quid pro quo. If in exchange for an exemption we are forced to accept a national utility tax, then we will have become victims of deception. Political deal-making or backroom compromises have no place in the resolution of this important issue.

As for specific recommendations, I would urge you to amend the Mitchell-Baucus proposal by explicitly extending the clean States exemption beyond the year 2000, as long as facilities in those States continue to meet strict emission and ambient standards. Generation in these clean areas could be the answer to the country's SO₂ problems.

In addition, the allowance/offset purchase provision should be expanded to explicitly encompass the Nation, especially if the purchaser is from a clean region. Offsets within a "geographic limitation" which is still undefined may be cost prohibitive or even impossible to purchase. Additionally, the allowance provisions should be expanded to include non-utility industrial sources, of which Montana and the west have many, such as refineries here in Billings. Even though coal-fired electric generation is the major source of SO₂, there is a large number of other sources which this bill does not regulate. If SO₂ causes acid rain, and this bill intends to reduce acid rain, then future utility facilities should be able to buy any SO₂ offset, regardless of the source.

In addition, allowance credits should be awarded to utilities that have already saved emissions by constructing super clean facilities. The early implementation of strict control measures should be recognized and rewarded. In this way, States like Montana are allowed to grow like other States.

While I am primarily concerned about the acid rain provisions in the recent clean air proposals, I would also like to briefly comment on air toxics. As you well know, the 1986 amendments to the Superfund law included reporting requirements on industries releasing air emissions. With the Environmental Protection Agency beginning to acquire this monumental amount of data, we should recognize that we are only at the beginning of this new regulatory arena. While press releases declare that "tons" of pollutants are being emitted from various existing industrial sources, it is imperative that future laws and regulations in this area use health based standards. Again, science should reign supreme over perception and emotion. Costly control measures and operational changes, without consequent proven environmental benefits, is simply unjustified.

In conclusion, Mr. Chairman, the Bush proposal is a step in the right direction. And the Mitchell-Baucus bill adds some improvements to the effort. However, the eventual legislative vehicle should be further amended to explicitly make Montana part of the solution. Protecting existing coal mining jobs and generation facilities in Montana, and allowing for their increase, is good not only for Montana but the entire country. Providing for economic growth and utilizing our abundant clean coal reserves should be of paramount concern in any national acid rain legislation.

Thank you again for the opportunity to comment on this subject. Mr. Chairman, you have previously stated that there should be a level playing field for the west. I agree, and by adding explicit language, we can achieve it. I hope to continue a dialogue on this matter and work with you toward a successful resolution to this problem.

Thank you.

Senator BAUCUS. Thank you very much, Art. You have basically said what all of us know, that is that the Administration's proposals are helpful to the west, with certain deficiencies. I know a lot of people rushed out in support of the President's bill as soon as it was announced. And I don't mean to embarrass the Governor, but he sent me a glowing letter saying it's the best thing since sliced bread, and so forth—not exactly those words but that was the intent and the tone—and it is true that after further examination, it turns out that there are certain things in it that don't work out too well for us in the west. Frankly, it is because of the examination of that bill that I, as you stated, improved upon those provisions in the Administration's bill. The fact is I have not yet introduced my bill, in part because I want to hear what you and others have to say so we can further improve upon it.

The slight rub we in the west come up against is that even though we want provisions for further growth, somewhat along the lines you indicated, and offsets for our cleaner plants, we have this cap that the President wants very strongly. I've talked to Administrator Bill Reilly about that and I know the President very strong-

ly wants this cap. So, if there is a cap on total emissions Nation-wide, and if we in the west want credits and offsets because of the cap, other parts of the country are going to be further restricted. So the more we in the west credits, the more it is going to pinch and prevent credits and growth in other parts of the country. So we have got to work this out in a way that makes most sense for the west, but also in a way that it is not so pro-west that politically it has no chance of getting anywhere.

I'm wondering, do you know whether the Governor agrees with the basic principle in the President's bill that this country must reduce SO₂ emissions by 10 million tons by the year 2000? Does he agree or disagree with that basic premise?

Mr. WITTICH. I think that the idea of a cap is a good one. Whether or not 10 million tons is the correct number or 9.5 million, or 9 million, or 12 million, we haven't taken a position on that. If a banking or a credit provision were allowed for existing super clean facilities, I wouldn't think that would reduce the reduction—I've heard a half a million tons. If that's the case, then half a million tons is worth it to allow the west to have some growth potential. Just like the west wants a free market for its coal, we also want a market for these allowances and offsets. Right now, given the strict supply of existing SO₂ emissions, there isn't much of a market. How do we correct those market imbalances? Maybe one of the ways is with a credit or I've heard the term "bank" mentioned for existing savings. Maybe that's one of the ways to correct the market imbalances, given the fact that relatively we are newer in the growth curve in the Rocky Mountain West. But the idea of a cap is not being opposed.

Senator BAUCUS. Don't forget that even with the cap, that does not in itself cap growth, it caps emissions. So that by the year 2000, if a utility is more efficient in the production of power, they can still grow so long as the total emissions are capped. That's important for everybody to remember.

Mr. WITTICH. But in Montana, the only existing dirty source under this bill is the Corette plant in Billings. Unless we can add some other SO₂ sources into that pool of credits and allowances, there is not much of a market for new projects to buy emissions to build projects. That's our problem.

Senator BAUCUS. But the Corette plant is significant because, if my figures are correct, that plant emits about 7,000 tons of SO₂ a year, whereas Colstrip Units No. 1 through No. 4 emit about 17,000 tons. So that if we get MHD on the Corette plant here and reduce that 7,000 down very significantly, if the megawattage of Colstrip No. 1 through No. 4 is what—it's about 2,000-something, if my figures are right, proportions are correct—if we can reduce Corette in half, that's a lot of additional growth on Colstrip Units No. 1 through No. 4.

In addition, we also allow any utility to opt in to the system now, not wait until the year 2000. So that is Corette, or any plant, is able to reduce a little, they can bank that in for future growth after the year 2000.

You make some good points and these are the things that we're wrestling with as we try to put this bill together.

Thank you. I appreciate it.

Mr. WITTICH. Thank you.

Senator BAUCUS. Our next panel consists of Mr. Shaw Weaver, Director of the Sleep Disorders Clinic at the Deaconess Medical Center here in Billings; and John Etchart, Vice President of Corporate Affairs for Burlington-Northern Railroad.

Okay, Shaw, why don't you start?

STATEMENT OF SHAW WEAVER, DIRECTOR, SLEEP DISORDERS CLINIC, DEACONESS MEDICAL CENTER, REPRESENTING THE AMERICAN LUNG ASSOCIATION OF MONTANA

Mr. WEAVER. Good morning. My name is Shaw Weaver and I am here as a representative of the American Lung Association of Montana. I would like to read a brief statement prepared by the American Lung Association, not specifically on acid rain but on certain health aspects of the Clean Air Act.

We support the requirement of the Clean Air Act that the primary national ambient air quality standards must be set to protect the health of all population groups with an adequate margin of safety. What we mean by that is that although most statistics are based on the general population, we want the provisions set such that we can protect certain groups such as: children, pregnant women, asthmatics, people with chronic lung disease, and so forth.

In order to protect this population, we request that the quality standards include a provision for fine particulate standard of 2.5 microns or smaller. The reason for this is that particulate matter of this size is hard to control, it causes deep deposition in the lungs; and in the group that we're primarily interested, they have many, many reasons—and we could go on forever—why we want the particulate size at 2.5 microns or less. We believe that any particulate size larger than this is really unacceptable.

Thank you.

Senator BAUCUS. That's it?

Mr. WEAVER. That's it. We really have no statement on the cap or the volume of pollutants. More than anything, we're interested in the size of pollutants because we're interested in a health situation. Our basic goal is to look at people's health rather than at the total overall volume.

Senator BAUCUS. Okay. Thank you very much.

John.

STATEMENT OF JOHN ETCHART, VICE PRESIDENT, CORPORATE AFFAIRS, BURLINGTON NORTHERN RAILROAD

Mr. ETCHART. Senator Baucus, good morning. Thank you for the opportunity to testify here today. My name is John Etchart. I am vice president of the Burlington Northern Railroad Company. I would like to read into the record a short statement.

Burlington Northern operates on 1,785 miles of main lines and over 500 miles of branch lines in the State of Montana. The company has 2,500 employees in the State and an annual payroll of \$115 million. We pay taxes in the aggregate in the State of Montana—including property tax, sales and use, income, and miscellaneous taxes—amounting to about \$20 million. In addition, we make commercial purchases amounting to about \$8.6 million on an annual

basis. Burlington Northern has operated in the State since 1881. It provides crucial transportation for the State's mining, agricultural, and forest products industries. Last year Burlington Northern hauled nearly 30 million tons of Montana coal to various electrical utilities all around the country.

I am here this morning to testify in support of the Mitchell-Baucus proposal. As you mentioned last week in Washington, DC when you began hearings on the proposal, there are two important ramifications from the State of Montana's viewpoint. They are the impact on the State's economy and the impact on the State's environment.

We believe that your proposal maximizes the favorable impact on the State's economy while protecting the State's environment. We urge that you strenuously oppose any attempt to upset the delicate balance you have achieved. The important principles contained in your proposal which must be retained are:

One, the requirement that the polluter pay for the clean-up. You have said plenty on this topic.

Two, freedom of choice on the part of the utility as to how emissions reductions are achieved. Eastern high sulphur coal producers will urge the Congress to mandate that expensive equipment known as scrubbers be installed on existing plants in order to reduce emissions. Fuel switching to low sulphur western coal by these plants offers a low cost alternative while at the same time accomplishing the environmental goals.

Three, we need a trading mechanism allowing for flexibility in meeting the stringent environmental standards. This mechanism will provide incentives for all utilities to burn the cleanest coal available. This will provide new markets for Montana coal. Specifically, your proposal, which allows plants to build up allowances by opting for early reductions, will provide additional opportunities for marketing of Montana coal during Phase I.

Four, and lastly, we need the repeal of the requirement that new coal-fired plants install expensive and unnecessary scrubbers. You know that since 1977 it has been mandatory that all new coal-fired power plants install this unneeded equipment. This was an effort on the part of eastern high sulphur coal interests to manipulate coal markets to the disadvantage of Montana and other low sulphur coal reserves in the west.

Other witnesses here today will discuss the implications of the technical aspects of the proposal. We urge you to heed their advice, because seemingly minor provisions in the language could have significant and unintended impacts on both coal producers and utilities. It is crucial that care be taken in drafting the language of your bill in order to ensure the principles contained in your proposal are not compromised.

We see a great benefit for Montana here. I would like to focus on the potential economic impact on the State of Montana. The EPA estimates that acid rain bills containing the principles included in your proposal will result in a switch from high sulphur to low sulphur coal in the range of 85 to 95 million tons annually.

As you know, the vast majority of low sulphur coal reserves are in the Powder River Basin. We believe that Montana can increase its production roughly in accordance with its present market share.

On this basis, we believe that Montana could increase its production by 10 to 15 million tons per year by the year 2000. This increase in coal production would provide a significant boost to the State's economy. For example, we estimate that about 120 new jobs will be created for each additional one million tons of coal produced in the State. These jobs would be in the mining, railroad, and related service industries. Based upon these estimates of coal production, we could see an employment increase in excess of 1,700 jobs, with an annual income paid exceeding \$50 million. In addition, we see the State receiving an accumulation of additional taxes, both severance taxes and net and gross proceeds taxes, which would approach \$25 million on a yearly basis.

In summary, Mr. Chairman, this legislation can provide a significant economic benefit to the State as long as the principle elements remain in tact. On the other hand, amendments which provide for mandated scrubbing or cost-sharing of the clean-up costs will result in the loss of the very best opportunity for significant growth in coal production in the State for the foreseeable future. We applaud your efforts and look forward to working with you and your staff as the bill moves through Congress during the next few weeks.

I would like to offer a personal "thank you" to you, your staff, and the committee staff, Senator, for your diligent work on a short time basis producing what we think is a very good result for the State of Montana.

I will respond to questions if I can or I will defer to Dr. Richardson, who has done a good deal of in-depth analysis on the bill, who will be sitting on the following panel.

Senator BAUCUS. Thank you very much, John.

Shaw, I wonder if you could outline the actual health consequences, and maybe even economic consequences, if there is not act.

Mr. WEAVER. The health problems that I outlined, as specified in the particular groups that we are dealing with. Obviously children, especially young children, have the inability to clear their lungs as well. They breath through their mouths a fair bit more than adults do and the amount of air that they move in and out of their lungs is significantly greater per their body size than in adults. So in that particular group, the small micron size of particulate matter can be deposited very deep. This is not only true for them, but for the asthmatics and the chronic bronchitics. But it is the children that develop the problems pre-school age that tend to have these problems throughout their life. We also want to look at the people with heart disease, not so much that it is the deposition of particles, but the carbon monoxide in the atmosphere which reduces the blood oxygen levels. That is not only true in the heart disease but in the pregnant women. We have both groups covered in that area. People over the age of 65 have a reduced ability to cleanse their lungs, not only because of just the bodies natural deterioration over years, but also the fact that they are not as mobile, they don't move the volume of air as much in and out of their lungs and therefore deposition of these fine particles gets in their lungs, it stays in their lungs, and there is not much we can do about it.

As far as expenses, we have a number of figures but it is very difficult to compare industrial figures as far as cleaning up the air

to the cost of medical treatment or medications for these people. We have no idea what problems these people are going to have in 10 or 20 years.

Another problem is what pollutants we look at. A lot of time it comes down to what pollutants should we take out of the air. We look at "what does this item specifically cause." The problem is that most of the diseases we see cannot be pinpointed to one particular cause. It is a combination of all kinds of pollutants. We can't just cite the sulphur dioxide or the carbon monoxide, or any one individual item as the cause. So we have tried to combine all of our goals by pinpointing the one item, and that's the micron size of the particulate matter that is introduced into the air. We feel that by doing that—by limiting it to that one item—we can take care a significant number of problems that we look at.

Senator BAUCUS. The figures I've heard—and I'd like you to comment on whether you think they are accurate or not—are that there are between 2 and 5 percent premature deaths and premature illnesses in the country each year because of dirty air generally.

Mr. WEAVER. That's a safe estimate, yes.

Senator BAUCUS. That is translated I think to 50,000 premature attributable to acid rain.

Mr. WEAVER. That I'm not aware of.

Senator BAUCUS. Is it true that there is a synergistic effect between some chemicals—I read this somewhere—smoke and something else will cause a geometric progression.

Mr. WEAVER. Absolutely.

Senator BAUCUS. Can you give me some feeling about that. Do you know which pollutants tend to be associated with this geometric synergistic effect of morbidity and mortality?

Mr. WEAVER. The only information that we have, and the only statistics that I am aware of, always use a synergistic effect between the pollutants that are in the environment and smoking, a combination of those two. As for the retired coal miner who lives in Lockwood who has inhaled not only smoke dust but also a lot of SO_2 , there are no real figures for that because it is for a specific area. There would be no way to pinpoint that particular population.

Senator BAUCUS. I recall testimony earlier on this bill by the American Lung Association that we American's spend \$40 billion a year attributable to dirty air. That is the health costs.

Mr. WEAVER. That does not include the cleaning that—

Senator BAUCUS. That does not include cleaning. That is just on the health side.

Mr. WEAVER. Exactly. That is exactly right.

Senator BAUCUS. Could you comment on any health problems associated with nitrogen oxides?

Mr. WEAVER. We have a statement on nitrogen oxides, but basically we have no opening statement—and I'm reading this right from the ALA's viewpoints—their only feeling is that the reduction in automobile emissions will help correct this problem. They feel that the only place in the country where this is a serious problem is in southern California.

Senator BAUCUS. It is interesting that we in the west emit about three times as many pounds of nitrogen oxides as we do SO_2 —that's because we've cleaned up SO_2 so much—whereas other utilities in the midwest are about even because they haven't cleaned up SO_2 quite as much. It is my understanding, too, that nitrogen oxides are not only a health problem but also create a disability problem, that is, some of the haze in the atmosphere is attributable to nitrogen oxides. My bill and the President's bill both call for reduction of 2 million tons of nitrogen oxides by the year 2000. We have to figure out a way how to get at that on a cost-effective basis.

John, will the cap, in your view, have any effect on low sulfur coal compared with high sulfur coal? The thought is this; that with the cap—which requires utilities to keep their emissions at 1985–1987 levels—when various parts of the country want to grow to meet anticipated additional demand, there is going to be a real premium on low sulfur coal to help meet that growth. That cap will essentially be 1.2 pounds per million Btu, or less. If a utility wants to grow, the thought is that either only low sulfur coal, or low sulfur coal in conjunction with other clean coal technologies will be an option that is easier for a utility to meet than would and that option be with higher sulfur coal.

Mr. ETCHART. Senator, with regard to the caps implications in particular, I'd probably better defer it. We do see without any equivocation though that if legislation is enacted which contains the principles that you've introduced in your amendment to title V, we see profound growth possibilities for low sulfur coal. The figure I gave you, in our estimation, and it isn't out of whole cloth, is that as much as 85 to 95 million tons in additional sales of low sulfur coal, the great bulk of which would emanate from the Powder River Basin.

Senator BAUCUS. Could you comment a little on transportation costs? How are we going to get them down?

Mr. ETCHART. Well, Senator, that's a topic of frequent discussion. We have something in the neighborhood of 150 million tons of coal that we deliver from point of origin to utilities over much of the United States. The inference there is that in a highly competitive field where there are lots of alternatives, the producer must be efficient, then that the taxing jurisdiction in its severance and production taxes must be equitable, and finally, the transporter is providing competitive transportation or that coal just wouldn't be selling.

In the four years from early 1985 until 1989, our coal transportation costs are down in the neighborhood of 15 percent on the average. That is for a number of good reasons, one of which is increased competition in the Powder River Basin, but largely the efficiencies we've been able to accomplish—unit trains, consolidation of facilities, and the like. I think we move a ton of coal a mile for about 1.4 cents. When you think of it in that way, railroads really are a very efficient way to move a bulk commodity long distances.

Senator BAUCUS. Do you see more markets for Powder River Basin coal, particularly Montana Powder River Basin coal, under the legislation that I'm introducing? More markets, or less, or about the same?

Mr. ETCHART. The point I tried to make is we see a great market potential for low sulfur coal if the clean air bill is enacted in the

way you have amended it. That growth would be something in the neighborhood of 85 to 95 million tons annually over the whole country. The Powder River Basin share—

Senator BAUCUS. Over how many years?

Mr. ETCHART. To the year 2000, 85 to 95 million tons total growth annually with that level reached by the year 2000.

Senator BAUCUS. Montana now produces what, about 20 million tons a year?

Mr. ETCHART. A little more than that, more like 35 million tons a year. We see Montana's share of that growth in the 10 to 15 million ton per year range, with the attendant implications that I've outlined in my testimony.

Senator BAUCUS. Thank you both very much.

Our next and final panel consists of Jim Mockler, Executive Director of Montana Coal Council; Kay Blehm, with the Northern Plains Resource Council; Dan Berube, President and CEO of ENTECH in Butte, here representing Montana Power; and Doug Richardson, with GeoResearch, Inc., Billings.

STATEMENT OF JAMES D. MOCKLER, EXECUTIVE DIRECTOR, MONTANA COAL COUNCIL

Mr. MOCKLER. Senator Baucus, I am James D. Mockler, Executive Director of the Montana Coal Council. It is my pleasure to appear here before you today to represent the coal producers of Montana, as well as the hundreds of people who not only work directly for the industry but also supply the industry with goods and services.

Montana is blessed with the largest coal reserves in the United States, with over 120 billion tons of known reserves to 300 feet. In 1988, Montana producers mined 38.9 million tons of coal with a workforce of over 1,000 people and a payroll in excess of \$40 million. In addition, over \$56 million was paid in Federal royalties, and some \$83 million in production taxes.

Changes proposed in the Clean Air Act are critical to our ability to continue to supply a major part of the Nation's desperately needed energy. We are, therefore, keenly interested in the amendments that you and Senator Mitchell are preparing to offer to the Clean Air Act.

First, we want to thank you for including several provisions in your draft legislation that put Montana coal producers on a level playing field and recognize the efforts of Montana to keep their air clean. Our comments and positions those provisions are as follows:

One, no cost sharing provision.

We agree with the legislation insofar as there should not be any form of cost-sharing. Imposing a fee or a tax to subsidize the installation of scrubbers on eastern and midwestern utilities is unfair to western coal producers and utilities. Western utilities and their rate payers are already paying to meet more stringent clean air requirements. Furthermore, cost-sharing amounts to protectionism for eastern and midwestern high sulphur coals and discriminates against Montana coal.

Two, least cost option.

We support the provisions allowing utilities to choose the method for complying with emissions reduction requirements including, at the option of the utility, fuel switching, scrubbers, or any other cost-effective technology. Mandating the installation of scrubbers would discriminate against Montana producers in key market areas and create pressure for cost sharing.

Three, clean States credits.

We commend your recognizing the past efforts of Montana and others in cleaning up emissions. It is only fair that these expensive efforts, which have already been absorbed by Montana rate payers, be recognized.

Four, repeal of the percentage reduction.

This provision, although in need of some modification from the draft, is extremely important to the ability of our coal to compete. Montana coal cannot fairly and effectively participate in meeting energy demand unless the marketplace is a level playing field. We feel this provision makes a level playing field. The repeal of percentage reduction is consistent with your approach on Phases I and II and we strongly support it.

We would, however, be remiss not to point out some of the provisions of the draft amendments that we feel need to be altered.

One, delete the offset—Greenfields—provisions for new powerplants.

It is important especially to the west that provisions for growth be allowed. This could be done by allowing credits to utilities that are presently operating below permitted levels, allowing for the transfer of emissions from other non-utility sources or from a Federal pool of allocations.

Two, allow for interpollutant trading.

Allowing for the trading of NO_x for SO_2 —or NO_x for SO_2 , as they like to say—and the vice versa would provide additional flexibility to utilities to make cost-effective reductions, including the use of cleaner fuels such as low sulphur Montana coal.

On behalf of all of those in our industry affected either directly or indirectly, I offer our sincere gratitude for your efforts in formulating legislation that will be a great step toward cleaning our environment while still allowing this key industry to grow and prosper. We know that the real challenge for us is still to come in the committee and on the floor of the Senate. We look forward to working with you in the coming weeks as representatives of Montana coal producers.

Thank you, Senator.

Senator BAUCUS. Thank you.

Kay, you go next.

STATEMENT OF KAY BLEHM, NORTHERN PLAINS RESOURCE COUNCIL, REPRESENTING YELLOWSTONE VALLEY CITIZENS' COUNCIL

Ms. BLEHM. For the record, my name is Kay Blehm. I reside at 623 Avenue B, Billings, Montana and am representing Yellowstone Valley Citizens' Council, YVCC, an affiliate of the Northern Plains Resource Council.

YVCC was formed in 1979 and has a long history of working on SO₂ issues in Yellowstone County and Montana. Prior to that, NPPRC testified and worked on the first national and State ambient air quality standards. Our involvement has been one of working to ensure Montana citizens a healthy and clean environment in which they maintain a high quality of life for themselves and their families.

The air quality saga of Montana is one of successful ongoing industry efforts to resist and weaken the enforcement of our air quality laws and regulations designed to reduced dangerous pollutants in our air. Montana has two SO₂ non-attainment areas: Laurel and East Helena. The SO₂ monitoring in Montana has been diminished. Prior to 1987, Yellowstone County had twelve SO₂ monitors, it now has five, three of which are funded by industry through the Billings Laurel Air Quality Technical Committee, BLAQTC and two funded by the State. After the adoption of the 1989 State budget, Montana's air quality staff said that the agency may not have the funds to continue the operation of both monitors. The law also stipulates that the State will monitor only as long as BLAQTC continues, making State air quality monitoring unacceptably contingent on the willingness of industry to regulate itself. In 1987, Yellowstone SO₂ emissions accounted for 43 percent of the State's SO₂ emissions. ASARCO, Inc.'s smelter in East Helena accounted for 37 percent of the State's SO₂ emissions; however, the Montana Air Quality Data and Informational Summary for 1987 showed no monitoring of SO₂ emissions there.

The existing SO₂ monitors in Montana cannot measure SO₂ levels above 0.95 parts per million, yet there have been health studies conducted which prove that people who are sensitive to dirty air are at risk when emissions reach 0.5 parts per million SO₂ for 2 to 5 minutes. Federal legislation needs to be implemented to address emissions between 0.95 parts per million and 0.5 parts per million for 2 to 5 minutes.

We feel it is incumbent upon our Federal Government to make policy which will regulate the State regulators to ensure loopholes in State laws and rules are not used to allow the continuation of existing pollution at current levels; and that will prohibit the use of studies which are funded with public money without the public being represented on steering committees. One proposed study will be used to find "clean columns" of air in which to site new stack industries to dirty it up more. The present executive branch for Montana has said that is their goal with regard to air quality in Yellowstone County and we think that is a travesty on Montana's people.

We also need standards that will counter the threats by industry to shut down and move to another State. This would not be a viable option if the EPA were effectively fulfilling its oversight role of providing a uniform bottom line for industry to meet in all States. In many cases when the decision to shut down occurs, it is because the plant has been fully amortized not because of the costs of clean-up.

We are opposed to a system of marketable permits if that means allowing companies to sell the increments of clean air they are no longer using due to lessening their emissions some way. We are

also opposed to crediting the excess emissions requirement toward Phase II and/or post-2000 emission capacity requirement. Is not the air part of the public domain? By whom and how will the concept be regulated? Finally, such a system will perpetuate pollution at an intolerable level in this valley and elsewhere because no net decrease of air pollution will occur.

We are opposed to fuel switching if it means increasing the consumption of Montana's low sulphur coal. Strip-mining places agricultural operations in jeopardy and will displace more agricultural families. It may also lead to cutbacks in production or shut-down of eastern mines and a loss of jobs.

We are opposed to the "clean state credit" because all SO₂ emitters are not included in the equation. In Yellowstone and Rosebud Counties, coal-fired plants constituted 20.35 percent of the State's SO₂ emissions. The SO₂ emitters using fuel oil constituted 32.65 percent of the State's SO₂ emissions. These two counties accounted for 53 percent of the State's SO₂ emissions.

When the emissions in East Helena are included in these figures, 12 SO₂ emitters were responsible for 90 percent of our SO₂ emissions. Six of these are located in Yellowstone County, about which the Montana Air Quality Data and Information Summary for 1987 said:

The 1987 estimated population of ACQR 140 [region which Yellowstone County belongs] was 170,900 people, approximately 21 percent of the State population. The majority of people in this region live in Yellowstone County—Billings and Laurel—which continues to exhibit the most vigorous growth.

That means that on the average each person in this region was exposed to 17 tons of SO₂ that year. This data clearly demonstrates the pressing need to include all SO₂ emitters in any clean air legislation.

We support the use of low sulphur oil.

We support all new emitters, including refineries, being required to utilize scrubbers.

We support all SO₂ emitters, including refineries, being required to reduce their emissions to a 1.2 pound per million BTU rate based on the 1985-1987 capacity.

We believe that the percentage reduction requirement should remain in effect. Companies should be allowed to attain it in any manner they can.

We agree that the year 2000 is a good year for compliance of the 10 million tons of SO₂ reduction.

We are always interested in expanding laws to address other environmental issues including toxins. We would be most interested in any language that would address these issues. East Helena and Yellowstone County, for instance, are in need of regulations that will address all the pollutants its citizens are being exposed to.

As always, we feel conservation, good stewardship practices, and education are the key to weaning ourselves from the use of fossil fuels. We hope that the Federal regulations will play a pivotal role in this process.

We also believe that adding control devices to existing plants creates jobs and that Montana's future long-term economic viability will come from clean industries.

Senator Baucus, thank you for your time and interest in holding this field hearing in Billings.

Senator BAUCUS. Thank you very much.

I guess you are next, Dan.

STATEMENT OF DAN BERUBE, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ENTECH, INC., REPRESENTING MONTANA POWER

Mr. BERUBE. Thank you, Senator. My name is Dan Berube and I am president of ENTECH, Inc., a subsidiary of Montana Power Company and the parent of Western Energy Company.

The basis of my remarks is the same written statement submitted by Paul Schmechel, Chairman of Montana Power, on October 4, although the emphasis will be from the perspective of my own particular responsibilities and experiences in my part of the company. My experience does include being in charge of the design, construction, and operation at various times of Colstrip Units No. 3 and No. 4, and being the President of Western Energy Company.

Western Energy Company was the operator of the second largest mine in the United States last year. As you have already acknowledged, it supplies coal to the four Colstrip plants that are owned by five utilities in the northwest, and, in addition, to the Corette plant here in Billings. It also ships economically significant quantities of coal to utilities in the upper midwestern States.

I certainly want to thank you for the opportunity for Montana to be heard on this very important national topic. It is clear to me that legislators in other States simply don't understand how unfair some of the concepts that they are proposing would be because of the disproportionate effect they would have when applied to clean States like Montana.

The legislation, in my opinion, should not set even lower standards for the cleanest plants than they now have, those that are below 1.2 pounds of SO₂ per million BTU already. Existing clean plants should be allowed to operate at permitted levels. In requiring such plants to operate at their 1985 levels, the legislation tends to assume that coal is a uniform commodity in sulphur and in heating value and that plant operations are a constant. They aren't. Those plants that had unusually low sulphur in their fuel in 1985 will be penalized forever to what I don't see as any useful purpose. For example, Colstrip 3 and 4 has in its permit a requirement of 0.1 pounds of SO₂ per million BTU—some 12 times better than the 1.2 national target in other legislation. In 1985, their actual operation was 0.6 and 0.8 for each of the two units—some 15 to 20 times better than the 1.2 target. Currently, they are operating at about 0.9 pounds of SO₂ per million btu. The only difference is that the miners are in a part of the coal field with slightly higher sulphur content than they were in 1985.

The plants are still operated well below their permitted levels, but above the 1985 level. It doesn't seem to me that it makes sense to make a performance of 0.9 illegal when the permit based on well defined criteria allowed 0.1. Such plants should not be forced to find additional reductions or reduce their operating levels when they are the cleanest plants in the country. Likewise, the actions

should not cause the diminishment of the operation of the mines that serve those plants.

An nitrogen oxide ceiling of 0.4 I believe is inappropriately low for the newer coal-fired power plants that are now meeting the 0.7 that was a brand new limit only a few years ago. Colstrip Units No. 1 and No. 2 have been retrofitted with new technology that was not available when they were built and at times they average 0.4. But I don't believe that they could be depended upon to meet that as a ceiling on a continuous basis. I don't think Montana customers should have to pay for still another round of NO_x reductions while their eastern counterparts have done nothing to meet the 0.7 level that currently exists.

The Administration bill concerns me very much in regard to an apparent requirement for another round of permitting. Colstrip No. 3 and No. 4 took six years, went through both State and Federal processes, and had to contend with major changes in the rules during that process. The process was complete and exhaustive and, unfortunately, contentious. I don't believe that going through that process all over again would be justified in the case of plants like Colstrip Units No. 3 and No. 4. I believe, instead, that that permit, and others like it, should be allowed to stand and be the accepted limits of operations.

Let me also just point out, you mentioned 17,000 tons of SO₂ is an annual emission for the Colstrip Units. The 17,000 actually includes Colstrip and Corette, and with Corette it is something between 6,000 and 7,000 tons, Colstrip in total is a little over 10,000, for some 2,200 megawatts of gross generation.

I certainly encourage and support the effort to repeal a percent reduction requirement. I think the freedom to decide on how to comply with the limits in the law in the best possible way should be allowed for any operator. I am concerned though that the language that I see in the draft Mitchell-Baucus bill may not quite do that. To me, it would enable EPA to revert back to BACT determinations, which historically and now are defined as scrubbers. So I hope you can find a way to make your intent to allow non-scrubbing choices very clear.

I am gratified that your bill recognizes that it is not necessary to further restrict fugitive dust from coal mining operations. I am concerned that the Administration's bill could severely restrict coal mining in Montana by not limiting its fugitive dust provisions solely to mandatory class 1 areas.

In calling for national caps on SO₂, I have to be concerned that there is a potential hardship on clean States from this concept. I believe that the annual tonnage limit should be adjusted to recognize more fully the clean state situation. Our coal customers should be able to get credit where they are already under 1.2 pounds of SO₂ per million Btu to allow the potential for economic growth in the cleanest areas. I think it is ironic that a potential for growth is being given automatically to those areas where the plants are well over 1.2 because they waited until they were forced to make a reduction. But growth will not be possible in clean areas like ours if an allowance can't be bought from somewhere else. I think it is doubtful that the areas like Montana will be able to trade for allowances with the areas that will easily achieve them because they

will be so valuable to those places that I think they will tend to be protected.

In regard to cost-sharing, I am gratified that both your bill and the Administration's bill have excluded the notion that we should have to share in the cost of reducing emissions elsewhere. We certainly share your strong feelings that in States like ours we are already paying and we should not have to pay again.

I would like to mention briefly the Clean Coal Program because I believe it is the best way to make good use of the one energy source we have available at low cost and free from control of foreign governments. The legislation should allow more realistic time frames for the utilization—say, 2005—of clean coal technologies, and, in addition, other programs, such as MHD development, should be encouraged because of their potential to decrease the emissions per unit of useful output.

Finally, I want to join with the many others in expressing appreciation for your efforts in recognizing clean States in your bill. I applaud your continued work for fair treatment of Montana with this legislation.

I would certainly be happy to try to answer any questions you may have.

Senator BAUCUS. Thank you very much, Dan. That was a very thoughtful presentation.

Doug.

STATEMENT OF DOUGLAS RICHARDSON, PRESIDENT, GEORESEARCH, INC.

Mr. RICHARDSON. Thank you, Chairman Baucus. I am Douglas Richardson, President of GeoResearch, Inc. Thank you for holding your Senate subcommittee hearing in Montana on this issue of such great importance to our State and this region. Thank you also for inviting me to comment today before your subcommittee on the proposed Baucus-Mitchell acid deposition control bill.

Our firm, GeoResearch, Inc., has been involved in the conduct of numerous scientific and technical studies relating to air quality and natural resources throughout Montana and the Northern Great Plains region. During the past ten years, we have conducted more such work in this region by far than any other firm. We have also followed the acid rain legislative debate in Congress very closely, from both the technical and regulatory perspective, for over eight years.

I want to compliment you on the development of an acid deposition proposal which presents in my experience the most balanced and thoughtful treatment of this complex issue to have emerged from the congressional debate to date. Not only is your proposal regionally balanced, but it relies upon equitable and economically sound public policy principles to achieve its environmental goals. Your bill embodies the least cost, freedom of choice approach to achieving acid deposition related pollutant reductions. These principles must continue to govern our environmental policy if we are to avoid repeating the regional economic inequities which have punished this region in the past as a result of short-sighted special interest approaches to national environmental legislation.

Among the many other positive features of your acid deposition proposal for Montana are its provisions relating to the clean states exemption, the repeal of percent reduction, the section 410 provisions which allow plants to build up allowances early for opting for early reductions, and the definition of existing plants.

There are a few changes, however, that I believe would be helpful and should be made to the proposed bill, each of which either strengthens the environmental benefits of the bill or safeguards future economic growth potential for Montana, or both. These changes, designed to help protect Montana, are listed below, together with specific suggested language revisions to the bill which might accomplish those changes.

Thank you for the opportunity to work together with you on this very significant legislation. I list about seven areas where I think some specific changes might be helpful and I would be happy to work with you and your staff on those. Rather than list each one right now, I just want to focus on one which has received a lot of discussion today. That is the long-term offset provisions, in other words, the cap for all new plants coming into operation after the year 2000.

If that kind of provision remains a part of national environmental legislation—of course, that's in the Administration bill, as well—it is extremely important that we work together to devise mechanisms to ensure that that emissions trading program will work for Montana. In other words, to be sure that we can get access to those credits that might be held in Ohio or Illinois to allow for future growth in Montana. There are a couple of ways that I think that might be done.

One approach is to develop provisions within the emissions trading program to require the establishment of a significant Federal pool of allocations which would be accessible to all utilities or States on an equal access and equal cost basis. In other words, that would say that some portion of those allocations which flow into the dirty utilities in Ohio, etc., would go into some kind of Federal pool—maybe 50 percent of unused allocations—that then could be either auctioned or bid on, like in the stock market, at some equal cost rate by utilities or other facilities that may want to develop in Montana for the next 100 years.

Another approach to that would be to issue tradable allocations to already clean plants, or perhaps to already clean States, to ensure better geographic distribution of future growth potential.

I think both of those avenues may be means to approach that cap provision to the benefit of Montana, if it remains in the legislation.

Thank you very much for an excellent proposal.

Senator BAUCUS. Thank you. Let me just ask a basic question of each of you. Given the general need to reduce sulphur dioxide emissions Nationwide, and given your understanding of what is economically feasible in our industry in our State, and given the environmental concerns in our State—let me start first with the Administration's bill—do you or do you not think that the Administration bill is better or worse than current law? Would you vote for it in total, or would you vote against it in total, if only that choice were before you today?

I'll start with Jim.

Mr. MOCKLER. I would have to say that I would vote against it, not only because of these provisions, but because of other provisions that are in it.

Senator BAUCUS. Kay.

Ms. BLEHM. I don't know.

Senator BAUCUS. Dan.

Mr. BERUBE. I'd vote against it, sir.

Mr. RICHARDSON. It makes some very good progress but it needs some little changes. Exactly as is, it could penalize this region quite a bit.

Senator BAUCUS. Now the other alternative is the bill that I've outlined that I'm going to introduce along with Senator Mitchell. Compared with the current situation—you have only as it is right now—would you vote for it or against it? That's the only choice we get.

Mr. MOCKLER. You mean without any changes in it?

Senator BAUCUS. With no changes.

Mr. MOCKLER. I'd probably vote for it. I don't know, but I think it could help.

Senator BAUCUS. Kay.

Ms. BLEHM. I'd like to be lobbied first.

Senator BAUCUS. Dan.

Mr. BERUBE. Well, in spite of the fact that it is better than the Administration's bill, I think I would still have to vote against it.

Senator BAUCUS. Doug.

Mr. RICHARDSON. I still think a few of these little changes should be made—

Mr. BERUBE. That's why I would vote against it.

Mr. RICHARDSON. But it is a very good bill. It is much better than the President's bill in terms of this region.

Senator BAUCUS. Again, let's go down the line. Jim, you're a little hesitant. What is the most important change you think we should make?

Mr. MOCKLER. I think the Greenfields provisions for somehow developing a credit. If you look at the west as a whole, what is tied strictly to power plants, you have one power in the State of Oregon that is already scrubbed, one in Washington which is not, none in Idaho. We view the northwest region, not just Montana, as a potential market area. So we have no place to trade. I think that those goals could be accomplished in lowering the overall SO₂ and still give us some options for growth. I think that would be the area that concerns me most.

Senator BAUCUS. Okay. Dan, what's the major change you would make?

Mr. BERUBE. I think the first one would be to allow existing clean plants to operate at their permitted levels.

Senator BAUCUS. When you said "Greenfields," Jim, you're talking about the same provision, right?

Mr. MOCKLER. I'm talking about new powerplants.

Senator BAUCUS. New powerplants. And you're talking about the existing ones?

Mr. BERUBE. I'm talking about the requirement that on the day legislation becomes effective that the 1985 rates would be the new ceiling for even the existing clean plants. That would cause a re-

duction in their operations, if that would solve the problem, and it hasn't been demonstrated that it would.

Senator BAUCUS. The Bush bill has 1985, as does my bill, so far. The Bush bill has 1985 to 1987 as the capacity standard. I am going to 1996 to 1998 as the capacity utilization standard. Does that make a difference?

Mr. BERUBE. What were those dates?

Senator BAUCUS. My bill will use 1996 to 1998.

Mr. BERUBE. Well, I'm not sure what that would be.

Senator BAUCUS. Hopefully, higher than 1985 to 1987. Probably higher than 1985 to 1987.

Mr. BERUBE. I still think it is very critical that if they are already below what is the national target of 1.2, and they have a permit that allows them to control their operation in other ways, then that permit should be their ceiling and they should be allowed freedom to operate at that level.

Senator BAUCUS. Doug, the major change for you I guess would be the first one you mentioned, the new plants?

Mr. RICHARDSON. I would work to make that allocation system as accessible to already clean States that have few existing industries, like Montana. In other words, some way to prevent hoarding in the allocations program. That's the big concern, really.

Senator BAUCUS. There are some who say that local public utility commissions would not let that hoarding, banking, take place because that would be a benefit that the local PUC would have for selling or maybe put it in the rate base or something. Maybe there is some way in this bill to figure out a way to prevent that kind of hoarding. You suggested one way—a kind of pooling of the allocation—that might be a way to get at that.

Mr. RICHARDSON. I think some of those PSCs may even, on the other hand, make it difficult for those utilities to trade those off.

Senator BAUCUS. Why is that?

Mr. RICHARDSON. Because they would be trading off some of their future growth potential in their own region. They have maybe as much a problem to really having a free market in terms of those allocations as do the utilities.

Senator BAUCUS. What would the increase in SO₂ emissions be if utilities were given credit for emitting at a rate cleaner than the 1.2? I'm getting at your point, Dan. Anybody have any estimates what increases in SO₂ emissions would be?

Mr. MOCKLER. In Montana, it would be small.

Senator BAUCUS. I mean Nationwide?

Mr. MOCKLER. I couldn't give a Nationwide estimate.

Mr. RICHARDSON. I have done a little looking at that. Basically, if some allocations were given to plants already clean, you would set up some threshold for that. In other words, the difference between the permitted and the actual, for instance; or the difference between the actual and equivalent emission rate, such as 1.2 or .6, so where you set that threshold would depend largely on the amount of tonnage you are talking about. But you would still have a 10 million ton bill. The only difference if you issued some allocations on already clean utilities, such as for instance Montana Power Company, which is already emitting well below their permitted levels, the only thing you would do is have the long-term post-2000

year cap be slightly higher. In other words, you would still come down all the way to 10 million tons. You would still have a 10 million ton bill, and then the cap which extends out would have the opportunity to grow maybe half a million tons, depending on where you set that cap, and there would still be for ad infinitum a cap on all emissions in the United States.

Senator BAUCUS. So it would be 10 million plus 500?

Mr. RICHARDSON. That's right. In other words, if we're emitting nationally 26 million tons of SO_2 right now and you reduce it by 10 million tons down to 16 million tons, then your cap might end up being at 16 million tons but only as new facilities come on, then you would have an opportunity to say 16.5 or something like that, but that would still be a cap.

Senator BAUCUS. Can you devise a way to still keep the same 10 million ton net reduction? I only ask that because as a political matter, with the New England States and with the Administration, it might be difficult to get a little bubble after the year 2000.

Mr. RICHARDSON. I would be happy to work on that with you.

Senator BAUCUS. I understand the suggestion to trade SO_x for NO_x , that you suggested, Jim. Obviously the more flexibility from a businessman's point of view the better. But the more there is trading SO_2 reductions for NO_x reductions, that might make it difficult to get a true 2 million ton NO_x reduction. That's what we run up against. Now that may beg the question because some people might say we don't need a 2 million NO_x reduction. But many people feel that because NO_x is also a precursor to acid rain, and because there are also additional health problems associated with NO_x , it is important to at least try to get the NO_x reduction.

Dan, I was a little interested in your testimony which stated that Colstrip Units No. 1 and No. 2 at times have a 0.4 NO_x rate. Is that right?

Mr. BERUBE. Yes, they do. Colstrip Units No. 1 and No. 2 were being built, they were all into construction, at the time that 0.7 became the requirement for tangentially fired boilers.

Senator BAUCUS. Where is that requirement? Is that in the law someplace, that 0.7?

Mr. BERUBE. I believe the 0.7 is an EPA regulation. At any rate, it became effective. That was due, in part, because the suppliers were advising EPA that it was available as a guarantee. We were already building the units, so it became incumbent on us and we went knocking on their door and they told us that it wasn't guaranteed for your ends. That's the kind of a thing you run into between users trying to put something in and suppliers pushing the state of the art from their perspective. At any rate, they were built for 0.7 ultimately, and Units No. 3 and No. 4 were built for 0.7, as well. They do meet that—and we have data that demonstrates that—and they meet it over the long haul, as proven by continuous emission monitors, not just occasional grab sample testing. In Colstrip No. 1 and No. 2, however, we were able to get an additional improvement in the burner design retrofitted into the units more recently, on the order of three or four years ago. That reduced the NO_x emissions still further. I believe the average in 1988 was about 0.4. But Units No. 3 and No. 4, which had a little later design of the original, and also being larger units, they meet the 0.7 easily

but they don't meet 0.4. It is our understanding that a complete retrofit to try to achieve 0.4, just based on current burner technology, would cost those units in the order of \$50 million. Selective catalytic reduction would cost something in excess of \$200 million. We would certainly prefer the burner requirement, but it doesn't appear to us that it is appropriate. There are plenty of other units in the country—

Senator BAUCUS. What is the standard? Are there any others? Do you have any idea what the range—

Mr. BERUBE. No. I didn't bring the numbers.

Senator BAUCUS. Could you give it a gut guess?

Mr. BERUBE. About one pound per million Btu, is my guess.

Senator BAUCUS. Why are we cleaner then?

Mr. BERUBE. We conformed with regulations that were developing while the plants were being built and we immediately proceeded to incorporate those.

Senator BAUCUS. More recent plants.

Mr. BERUBE. More recent plants, yes, sir.

Senator BAUCUS. That's the main reason.

Mr. BERUBE. Yes.

Mr. RICHARDSON. Those regulations relate to the New Source Performance Standards in the 1977 amendments to the Clean Air Act. So plants built more recently have more stringent requirements for NO_x than do the earlier ones.

Senator BAUCUS. Frankly, that makes some sense. The western States should get some credit for all that on SO_2 and NO_x , both. Yes, that does make good sense. Now it is up to me to magically figure out where to get that accomplished the best way possible.

Kay mentioned an interesting point about SO_2 . I think Nation-wide about 70 percent of sulphur dioxide is emitted from utilities, but it is a much lower percent in Montana.

Ms. BLEHM. Yes. I was rather surprised at the numbers myself.

Senator BAUCUS. It is true that this bill addresses utility SO_2 emissions, as does President Bush's bill. However, under the bill that I am introducing, non-utilities can opt in to get credits to sell to utilities that may want to expand or grow, which will tend to help in States like ours where there is a higher percentage of non-utility SO_2 emissions. In fact, I think Montana emits about 20,000 tons of SO_2 from powerplants, and State-wide we are emitting about 100,000 tons. So that's about 80 percent non-utility emissions, approximately.

Ms. BLEHM. That would be about right.

Senator BAUCUS. You raise an interesting point. The reason for the figures is just that our utilities have cleaned up a lot more than have utilities in other States.

Ms. BLEHM. What will the clean state exemption do?

Senator BAUCUS. The clean state exemption so far applies only to SO_2 , and only to utilities.

Ms. BLEHM. Only to utilities? It would not apply to refineries or to oil-fired—

Senator BAUCUS. Except to the degree I said. They can reduce and if they reduce, they can sell the credit to the utility. So there may be potential in our State there for non-utility SO_2 emitters to

try to get their SO₂ emissions down and sell to, say, Montana Power or MDU to—

Ms. BLEHM. But if they are exempted, what is that going to do to the overall emissions? Will that lower the overall emissions?

Senator BAUCUS. The overall emissions cap still stays the same.

I would like to ask you your views of the 10 million ton reduction by the year 2000 just as a principle. As you know, it is in the President's bill and it is in my bill. I don't mean to prejudge your answers, but I think it is in the air—no pun intended. It is going to happen. I'm just curious of the degree to which you accept that, don't accept it, live with it, just try to go along with it. Give me some sense, if you could.

Mr. BERUBE. My particular exposure in the coal industry, as I'm sure Jim's does, suggests to me that given that the NAPAP study is not complete and that many of the foundation thoughts that kicked off the program in the first place—such as the concern that acid rain was destroying the forest in Canada, and so on—are turning out to not be as significant as once thought, I agree that it certainly seems to be coming and we're going to have to try to figure out a way to live with it. But your question was, Is it required? I think the evidence has suggested it is not totally required.

Senator BAUCUS. Doug.

Mr. RICHARDSON. I may have read every proposed acid rain bill introduced in either the House or Senate in the last eight years. Those numbers have ranged between 6 million tons and 12.5 million. I think that politically and otherwise the 10 million ton is about on target. One important issue on the whole level of reduction that has been largely ignored in the acid rain debate is the fact that we're really talking about reductions here from existing dirty power plants for the most part, and mostly in the midwest. Every year that goes by without that legislation affects the cumulative reductions from an environmental point of view that are achieved. For instances, had an 8 million ton bill been enacted 6 years ago, it would have had 6 years of reductions from the life of those existing plants that would have been made earlier at a lower and less painful level. So I think the 10 million ton is about on target politically and, from what I sense, that's about where it is going to come out.

I think that the important thing coming into the debate now is that so many of previous bills, whatever their level, were ungodly costly to implement. In other words, we had a bill, S. 2001 by Senator Durenberger, a while ago which would have cost over \$40 million to implement. We had Waxman's H.R. 3400 and H.R. 4567 two and three congresses ago which would have cost in the upper \$30 million to implement. The thing that is probably as important as the total tonnage is the way in which you, and to some extent the Administration as well, have now made proposals which allow those reductions to take place at the lowest possible cost. That's really what it should be all about. There is only a limited amount of money in the world and everybody wants a good economy and everybody wants a good environment, and unless those two things can be balanced, in the end you really won't get either of them, one of them is going to be hurt. So, you have a good tonnage reduction for the least cost.

Senator BAUCUS. Jim.

Mr. MOCKLER. Senator, I have a plaque on my wall that was a quote from a friend of mine who happened to be in politics and it says: "Logic and common sense don't have a damn thing to do with it—we're talking politics." I think that's where we are now where 10 million tons seems to be a political figure more than anything. I guess given that, one of the important sides is that I still feel that in the west, where we have controlled those, we should be able to somehow trade with other polluting industries, the smelter in Helena, for example. I guess that's the downside. It is aimed strictly at coal and strictly at the power industry pretty much, although your bill includes some oil. But that is the downside.

Senator BAUCUS. It is true the NAPAP study is not complete. It is also true that preliminary NAPAP analysis shows, as you said, Dan, that there is a correlation but maybe not as much a correlation as earlier thought. The National Academy of Sciences, however, did conclude that to get the rivers, lakes, and streams back, you need a 50 percent reduction. One can argue with their analysis, too. It is like life—you have to do the best you can with what you have. I think there is strong basis in fact, for the 10 million tons. It is less stringent than the 12 million tons figure that has been in prior bills. It is later and there is better technology, hopefully, and with the new clean coal technologies, some of which probably will come on line, I think that this could be less costly than might otherwise be the case.

You mentioned, Dan, that you would like the clean coal provisions to be extended to the year 2005. As you may know, in our bill we have extended clean coal technology application to the year 2003. Does two years make that much difference? I'm just curious?

Mr. BERUBE. No. Between your bill and the year 2005, I wouldn't say it makes that much difference. I believe the Administration's bill contemplates a shorter time line.

Senator BAUCUS. No, it is the same. It is 2003.

Mr. BERUBE. It is the same? Well, I'm not up to date. I apologize for that.

Senator BAUCUS. I would like to talk a little about the cap. As I see it, if we're going to have a trading allowance system—and I think most in the utilities industry and in the coal industry tend to favor that—it seems that by definition there almost has to be a cap if the trading system is going to work, if there is going to be value to allowances. Do both go hand in glove together? I'd just like your general advice about that.

Mr. MOCKLER. I guess the point, Senator, that I was trying to make was that if you take a utility who is now burning 3.5 percent sulphur coal in the midwest, without scrubbers because it's an old utility, and you put a scrubber on it and/or use western coal, you have tremendous room for growth. We already did that here. You could still maintain that 10 million ton reduction if you allowed us to go in more to other industries. I guess I missed that in the bill and I'm sorry, where you could go to the smelter at East Helena and get their credits.

Senator BAUCUS. Yes. We can do that.

Mr. MOCKLER. I guess I missed that. I'm sorry. I apologize. I think that's a very important key in there. But as far as limiting it to utility to utility, we have no place to go.

Senator BAUCUS. My basic question is, do the two concepts need each other? Does one need the other for it to work?

Mr. Berube, I've heard the figure of a maximum of 500,000 ton. That if the plants such as Colstrip were at the Federally-permitted level, which is 1.2, were allowed those credits in there, it would not be a significant difference in the amount of sulphur emitted into the environment, but it would make a tremendous difference in these States.

Mr. BERUBE. Conceptually, I don't know that I can argue you could have a trading allowance system without a cap. You probably do need it. But there are serious problems, as we've attempted to describe, for utilities trying to support the growth and demand for electricity in areas that are already clean, like Montana. You might require somebody else to trade an allowance, it still would be costly, and, in effect, we'd be paying for pollution controls twice—pollution controls on the new installation plus the pollution controls that they would be putting on before they would trade the allowance to us. It may just be so costly that the only alternative is to be looking at trying to use natural gas instead, or importing Canadian electric power, and that sort of alternative. The sulphur dioxide national cap, as I understand it, is all directed at the utilities. Utilities are only 70 percent of the national emitters. SO_2 is SO_2 , what difference does it make where it comes from? Everybody should be limited.

Senator BAUCUS. I think the thought is that it is more manageable.

Mr. BERUBE. Oh, yes. Point source, easy to get at. I understand that very well.

Ms. BLEHM. When you talk about point source and knowing what their emissions are, there are some questions in the air right now about exactly what their emissions are and how we know what's come out of their stacks. I guess when you're looking at utilities, they do have the CEM, some of them do; but when you're looking at the refineries, there are very few refineries that have the CEMs. So we don't really know what's coming out of their stacks.

Senator BAUCUS. I guess I hear from all of you that what you're really saying is that you don't have too much of a problem with the cap as a concept Nation-wide except as it is applied to the western States that have already cleaned up so much, and therefore, makes it more difficult to expand or grow compared with other parts of the country.

Mr. BERUBE. It is disproportionate.

Senator BAUCUS. Yes. That's your basic point. I understand that and I have a lot of sympathy with that, but I have got to figure out a way to deal with that in a way that it keeps the same 10 million ton net reduction. That's the political equation I've got to figure out how to solve.

Ms. BLEHM. So you feel that the increment selling is the carrot that's needed for that?

Senator BAUCUS. The allowance system?

Ms. BLEHM. Yes.

Senator BAUCUS. I tend to think that the allowance system makes the attainment of the 10 million ton reduction more feasible, easier, and more cost-effective than does a non-allowance system. I think the allowance system is helpful. It gives utilities a little more flexibility. It lets them meet their specific situations a little more easily than would a non-allowance system.

Ms. BLEHM. It gives them a real economic incentive, doesn't it?

Senator BAUCUS. Yes, an economic incentive.

Mr. RICHARDSON. Senator, there are ways other than caps to do a trading system. We were hired by EPA in 1984 on a sole-source basis to look at implementation of emissions trading system in PSD areas across the country. They already had, as you know, a regulatory system for non-attainment areas. You could base it off ambient levels or you could base it off a cap which was tagged to something, population growth, for instance.

Senator BAUCUS. That's more difficult though. The ambient level is more difficult.

Mr. RICHARDSON. Yes. I think that with this system, it is an excellent system in terms of achieving the cost-effective reductions that you talked about. The only real problem from Montana's point of view, the primary real problem, is if that kind of trading system goes into effect, we've got to have some means to ensure that those kinds of things can be traded geographically. It is really more the mechanics. If that system is utilized, then there are the mechanics of it. You can work with the mechanics of the trading system without affecting the tonnage reduction.

Senator BAUCUS. You say so long as they can be traded "geographically." What do you mean?

Mr. RICHARDSON. Most of those allocations, of course, are going to end up in the hands of midwestern utilities.

Senator BAUCUS. Right. Because they are the dirtiest.

Mr. RICHARDSON. Right. Those allocations have two values to them. One is an economic value and the other is a future growth potential value. It puts the utilities such as AEP and other larger utilities in the midwest in an enviable position of being able to control future growth in the utility market. If somebody here, whether MDU, Montana Power Company, or a new utility, for instance, wanted to develop a new generating capacity—if we needed that in Montana, say we ever grow here, or electric cars become more popular and we need more power here—the question is can we generate it or would we be in a situation where some representative from Montana utilities might go petition AEP and they will say no, you can't have it, or okay, you can have it, but it is at this kind of extortionist price where it doesn't make it economical to generate the power that's needed in this region and, therefore, the economic growth could not develop here. So that's the question: how do you get some means to ensure that those things will be traded geographically and not hoarded from the point of view of regional favoritism?

Senator BAUCUS. Yes. We've got to deal with that. What percent of power generated in our State is exported?

Mr. BERUBE. About 65 percent of the Colstrip power is owned by utilities outside the State and who have invested in Montana and depend for their share of the plants on that amount. That's a

rough average of 50-50 ownership on Units No. 1 and No. 2, and 70 percent ownership on Units No. 3 and No. 4.

Senator BAUCUS. I was talking about production though. How much goes out of State?

Mr. BERUBE. Of course, we sell, on a short-term basis, out of State when we have surplus and they have a shortage on interconnected pools. And then a significant portion of our share in Unit No. 4 has been sold by contract to out of State, so you would have to add that increment to it. I'm talking just Colstrip. It is a number around 65-70 percent.

Senator BAUCUS. Is that percentage projected to continue indefinitely?

Mr. BERUBE. I would say it is probably constant because it is a done deal and I don't see any opportunity for future growth.

Senator BAUCUS. For how long?

Ms. BLEHM. Maybe 99 years.

Mr. BERUBE. I've forgotten how long, but it well into the lease life of the plant. I think it is close to the end of the our lease share of Unit No. 4.

Senator BAUCUS. How long is that?

Mr. BERUBE. I've forgotten, truthfully. It is something like 20 years.

Senator BAUCUS. Okay. Did anybody say anything that deserves a response? Anything else under your skin? Okay.

We have received written statements from various people and they will all be included in the record. I will look at them all, for those who are worried that I might not.

The hearing record will be kept open for another couple of weeks, for those of you who may want to submit additional material.

Thank you all very much. This is very helpful.

This hearing is adjourned.

[Whereupon, at 12:53 p.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

STATEMENT OF DOUGLAS RICHARDSON, GEORESEARCH, INC.

BEFORE THE SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

HEARING ON ACID RAIN

BILLINGS, MONTANA

OCTOBER 9, 1989

STATEMENT OF DOUGLAS RICHARDSON
BEFORE THE SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

BILLINGS, MONTANA

OCTOBER 9, 1989

Chairman Senator Baucus and Members of the Subcommittee:

I am Douglas Richardson, President of GeoResearch, Inc. Thank you for holding your Senate Subcommittee hearing in Montana on this issue of such great importance to our State and this Region. Thank you also for inviting me to comment today before your Subcommittee on the proposed Baucus-Mitchell acid deposition control bill.

Our firm, GeoResearch, Inc., has been involved in the conduct of numerous scientific and technical studies relating to air quality and natural resources throughout Montana and Northern Great Plains Region. During the past ten years, we have conducted more such work in this region, by far, than any other firm. We have also followed the acid rain legislative debate in Congress very closely, from both a technical and regulatory perspective, for over eight years.

I want to compliment you on the development of an acid deposition proposal which presents the most balanced and thoughtful treatment of this complex issue to have emerged from the Congressional debate to date. Not only is your proposal regionally balanced, but it relies upon equitable and economically sound public

policy principles to achieve its environmental goals. Your bill embodies the least-cost, freedom-of-choice approach to achieving acid deposition related pollutant reductions. These principles must continue to govern our environmental policy if we are to avoid repeating the regional economic inequities which have punished this region in the past as a result of short-sighted special interest approaches to national environmental legislation.

Among the many other positive features of your acid deposition proposal for Montana are its provisions regarding the Clean States Exemption, the Repeal of Percent Reduction, the Section 410 provisions which allow plants to build up allowances early by opting for early reductions, and the definition of existing plants.

There are, however, a few changes that I believe would be helpful and should be made to the proposed bill, each of which either strengthens the environmental benefits of the bill or safeguards future economic growth potential for Montana, or both. These changes, designed to help protect Montana, are listed below, together with specific suggested language revisions to the bill to accomplish these changes. Thank you for the opportunity to work together with you on this very significant legislation.

1. **Rate Cap for Clean States Plants - Section 406(b)**

This section should be changed to allow Clean States plants to emit at existing permitted levels rather than 1985 actual levels.

Recommendation: In Section 406(b), Delete the words "calendar year 1985" and Insert in its place the words "currently permitted".

Reason for change: Some units in Clean States were emitting at rates well below already extremely low permitted (and plant design) levels in 1985. It would be very difficult to sustain those very low rates (less than 0.1 lbs./mmBtu's of SO₂) on a long term basis. The total tonnage reduction lost as a result of this change will be nominal.

2. **NO_x Standards** - Section 407(b)

These standards, if applicable to Clean States utilities, could be impossible or very costly for Montana to comply with.

Recommendation: Develop an approach in consultation with affected utilities to minimize unnecessary costs to Montana rate payers through a more cost-effective approach to NO_x control relating to acid deposition.

3. **Offset Provisions for all new steam-electric utility units after year 2000.** Section 403(d).

Delete this provision (entire Section 403(d)) if possible. If not possible to do so, adopt two modifications to mitigate its growth-limiting impact on Montana.

- a) develop provisions within the emissions trading program to require establishment of a significant "federal pool" of allocations which would be accessible to all utilities (or states) on an equal access and equal cost basis.
- b) issue tradable allocations to "already clean" plants, or perhaps to "already clean" states, to ensure better geographic distribution of future growth potential.

Implementation of (a) above could be fostered by inserting in Section 403(b) [page 6, line 24], after the words "under this title", the following or similar language:

"and fair and equitable access to allowances within the system by all states and utilities."

Implementation of (b) above might be accomplished as follows: Insert in Section 403(a), [page 6, line 10], after the words "as provided in Section 408", the following or similar language:

"The Administrator shall also identify those existing clean plants which have already achieved significant reduction of emissions, and shall allocate to the owner or operator of such units annual allowances in an amount equal to the annual tonnage reduction of SO₂ achieved below an emission rate of 1.20 lbs/mmBtu's of SO₂ in the calendar year 1988."

Reason for change: The provision requiring offsets for all new power plants after year 2000 could severely limit economic development opportunities for states such as Montana, where there are few existing sources from which to obtain offsets. If the offset provision is retained, it is essential that its impact on Montana be mitigated by ensuring that the emissions trading system be accessible to all utilities and states on an open and equitable basis. Tradable allocations should also be issued to utilities which have already achieved exemplary emission reductions in the past.

4. **Interpollutant Trading**

Re-incorporate interpollutant trading provisions from Administration bill [Section 503(c) of Administration bill].

Reason for change: The purpose of this provision is to allow affected sources greater flexibility in obtaining combined SO₂ and NO_x reductions. As these pollutants are both important acid rain precursors, interpollutant trading between them is sound from the point of view of reducing acid deposition.

5. **Definition of Clean States - Section 406(a)**

Insert in Section 406(a) [page 12, line 19] after the words "were emitted" the following language: "by steam-electric generating plants".

Reason for change: Present language would include all sources of sulfur dioxide in calculating the 150,000 tons. The modification will clarify that only emissions from steam electric generating facilities will count toward the 150,000 tons. Without it "clean" states will number fewer than seven.

6. **Percent Reduction - Section 103.**

Section 103(a)(1)(A)(b) [page 28, line 9]. Delete the words "the best technological system of continuous emission reduction" and insert in its place "emission reduction methods".

Section 103(b) [page 28, lines 18-22]. Delete lines 18-22, add a period after the word "2000" in line 17.

Section 103(b) [page 28, line 16]. Delete the word "new".

Section 103(a)(1)(A) [page 27, line 24]. Insert after the word "through" the words "fuel choice or". Delete the words "the best system" and insert in its place the words "a method".

Reason for change: The language as currently written may not achieve a genuine repeal of percent reduction. The changes address two major concerns: 1) deletion of language which focuses on technology as the sole emissions reduction technique to the exclusion of fuel-switching or other methods, and 2) clarify that repeal applies equally to new and existing units after year 2000.

7. **Definition of "Receptor Regions".** Section 403(b)

Add new Section 402(n), to define the term "receptor regions", as follows:

"402(n). The term "receptor region" means the states of Maine, Vermont, New Hampshire, Massachusetts, New York, Connecticut, and Rhode Island."

Reason for change: This term is ambiguous and needs to be clearly defined to allow accurate interpretation of the effect of its usage.



YELLOWSTONE VALLEY CITIZENS COUNCIL

TESTIMONY
SENATE SUBCOMMITTEE ON
ENVIRONMENTAL PROTECTION
October 9, 1989
Billings, MT 59101

Ron J. Fenex
1809 Forrest Park
Billings, MT 59102

Good morning. My name is Ron J. Fenex. I represent the Yellowstone Valley Citizen's Council (YVCC), an affiliate of the Northern Plains Resource Council (NPRC). We appreciate the opportunity to speak at this hearing.

First, historical background concerning sulfur dioxide, (SO₂) pollution in the Billings/Laurel area is appropriate. The purpose is to illustrate the need for Federal clean air bills to include provisions requiring oil refineries in the area to significantly reduce SO₂ emissions. PLEASE NOTE - Billings area industries emit 37,000 tons of SO₂ per year - 100 tons per day. The Billings/Laurel Air Shed is no longer second to Pittsburgh for SO₂ levels. Billings is now the nations most polluted city for sulfur dioxide.

SO₂ is well-known for its adverse effects on human health, plants, animals and property. Its harmful properties are well documented.

YVCC was formed in 1979 to help ensure enforceable (state) air quality standards. The goal was implementation of standards adequate enough to protect public health, as mandated by the State Constitution. At that time, state boards and agencies conducted 2 years of exhaustive studies, reviews, and public hearings. At the conclusion of that process, rules were established to prevent further deterioration of Montana's air quality.

Since that time some Billings area industries and business groups have consistently challenged every effort to reduce pollution levels. In short, polluters and their friends have persistently refused to comply with the law. Following are a few examples of their blatant disregard for public health, the source of acid rain, and other quality of life issues.

- 1.) Count Challenges - First, these groups fought established regulations with court challenges.
- 2.) Rejections of Implementation - They then completely rejected the implementation plans formulated by the state.

- 3.) Economic Blackmail - During the last 12 years, Billings has been subjected to the thinly veiled threat of plant closures. At the same time they were setting production and profit records.
- 4.) Weakened Standards - When it appeared that the State Board of Health was going to take seriously its responsibility to enforce the rules, industry and their allies proposed and backed special interest legislation (HB-534), weakening SO2 standards for Billings alone. The legislature, seemingly weary of their antics, has taken the position that if Billings wants polluted air, let them have it.
- 5.) Weakened Monitoring and Data - Industries track record is riddled with violations, citations, and exceedances. Unable to meet the weakened standards, (set at the minimum Federal standard allowable) the Billings/Laurel Air Quality Technical Committee was established. This group immediately dismantled a long established, credible monitoring system. In effect, the fox now monitors public health in the chicken house.
- 6.) Rejection of Monitoring Legislation - In an attempt to establish credible data and information essential to enforce even the most minimal standards, local citizens asked the Legislature to require Continuous Emission Monitors (CEM's) on local polluters. This too was adamantly opposed by local business.
- 7.) SO2 Dispersion Modeling Study - This same group is now advocating an SO2 Dispersions Modeling Study (funded with public money). One clear purpose of which is to locate "columns" of clean air, to be also degraded by new SO2 emittens.

PLEASE NOTE - The current State Administration has vowed to exploit every loop-hole in the law to perpetuate dirty air in Billings.

The list of course, goes on. These activities over the years have functioned to reduce the appearance and enforceable evidence of pollution. They are well documented, and are a matter of public record.

Without Federal enforcement addressing oil refineries, short term standards for SO2, and protection of public health, the citizens of Montana's largest city - more than 10% of Montana's population - will continue to suffer from SO2 pollution.

Thank you

Testimony for the Field Hearing on Air Quality Legislation and Acid Rain
October 9, 1989 -- Billings, MT

U.S. Senator Max Baucus
Chairman, Senate Subcommittee for Environmental Protection

Good morning, Senator Baucus. Thank you for this opportunity to be heard.

My name is Eileen Morris. I reside at 1323 Janie Street, Billings, and I am a member of Yellowstone Valley Citizens Council, an affiliate of Northern Plains Resource Council.

The concern I have that I want to express to you today is with regard to the health effects of the high levels of SO₂ that exist in the valley trench here in the Billings Area, and especially the short-term, high-level peaks.

Currently, the air quality in Billings is a problem for people with asthma or other respiratory problems and those at risk -- the children and the elderly.

Henry Thomas, Ambient Standards Branch EPA, has written "I should note my concern of frequency of short term peaks of over .5 ppm in Billings Area" ... "It is near certainty ... asthmatics in Billings Area do experience exposures of concern."

No useful data has been analyzed in the 2-5 minute term in Billings because the monitors cannot record anything beyond .95 ppm and some^{past} readings have gone off the scale. [It is like driving 100 mph in a car but the speedometer ends at 55 mph.]

These short-term, high-peak exposures result in severe asthma attacks in some people. Nettie Lees is an example. She had a swift reaction while passing through dense refinery emissions in downtown Billings, and died about 24 hrs. later on July 3, 1985. Other Billings people experience severe reactions to short term exposure, also.

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Yellowstone Valley Citizens Council has been contacted by many asthma sufferers who believe pollution aggravates their problems and has made their life uncomfortable depending on how bad the pollution is. They tell us that away from a polluting environment they do not experience the same degree of problems. This, it appears to us, would discourage people from locating in Billings and could even drive people here away, which is NOT a wise community development strategy.

To correct our situation here, I am requesting three things:

1. A short-term, high-peak standard be developed
2. The EPA be forced to enforce the standards that exist
3. All SO₂ emitters, including refineries, be included in the law to bring about reduced SO₂ emissions

Thank you for holding these hearings.

Eileen Morris

STATEMENT OF JAMES PHELPS (2110 Bradbrook Court, Billings, Montana 59102) presented at the Senate Subcommittee on Environmental Protection hearing at Billings, Montana, October 9, 1982

My name is James Phelps. I have lived all of my life, except for military duty, in the West. My first concern about air pollution came about 1950 when our family lived in Idaho. A complex that manufactured fertilizer and elemental phosphorus was constructed. Everyone liked the employment, including me; I benefited directly. But as time went on, we realized the price: air pollution, causing among other things lung and other respiratory problems. Only after moving to Billings in 1970 and "living upwind" from industry did these ailments clear up for us. Never really disabling, still there were plenty of medical costs. These ceased, too.

In researching what I wished to say, I found an article by Stephen MacDonald in the Wall St. Journal (Thursday, January 8, 1970). What he said then remains true:

"So pollution has finally become an important major issue, attracting the interest of such diverse parties as President Nixon and your local student radical. * * * But this attention, welcome as it is, has been attracted in a way that presents some problems of its own. The big danger in mass outrage is that it tends to focus on simple, quick, painless courses of action, as if mere intensity of feeling can make the action work * * *"

MacDonald went on to say that all the long-term answers all involve not just a mere smattering of new laws, but drastic alterations in the way people live. Even the effective stopgaps are costly, only now beginning to become really developed, and calling for a level of political sophistication that has yet to come about.

Acid rain knows no political boundaries. It is a major point of conflict between Canada and the United States. Prime Minister Brian Mulroney finally was able to move former President Ronald Reagan to at least admit that acid rain was a trans-border problem (Star-Phoenix, Saskatoon, Saskatchewan, Monday, March 24, 1986, by-lined Carol Goar). But the subject of acid rain remains with all too many a Canadian plot to get Americans to stop burning coal and buy more Canadian hydro-electric power. More real is that Canadian hydro will be less costly and will hurt the use of American low-sulphur coal, much of it mined in Montana. It's all like a spider web--pull at one corner and something happens at the opposite corner. It is a complex and complicated problem and we need to get on with it.

U.S. Senator Max Baucus, Chairman
Senate Sub-Committee on Environmental Protection

Dear Senator Baucus:

These remarks are offered as testimony for the Sub-Committee hearing at Billings, Mont., Oct. 9, 1989. A voice problem will prevent me from reading this at the hearing. But I understand my statement will be entered in the record.

My position, in brief, is that the Clear Air Act should be strengthened wherever possible, instead of weakened. It should apply to oil refineries as well as coal-powered plants. I believe that is the position of most Montanans. A poll by an Eastern Montana faculty member recently showed 68 per cent of Yellowstone County residents would be willing to increase their taxes to help pay for cleaner air.

However, it seems inevitable that arguments for weakening the act will be presented. Powerful organizations representing both the coal and oil refining industries, and others, probably will argue against new safeguards to health and urge abandonment of some present safeguards. They are likely to plead poverty, threats to employment, and enormous problems in bringing new industry to Montana unless present safeguards are reduced. The old refrain that industry health must come before public health will be heard.

Spokesmen for at least two local oil refineries, and perhaps others, are likely to contend there really is little sulfur dioxide production in Yellowstone County; despite state and federal statistics to the contrary. They may argue also that there are locations within the county where no SO₂ is present; and that such locations--if they can be found--would permit new polluters to set up business here without violating clean air standards. Flexibility in enforcement of existing regulations probably will be urged. (Enforcement now is absent, for the most part.)

I believe committee members, with their broad knowledge of pollutant factors and the science-established effects of pollution on public health, will see the fallacy of those anti-health arguments. Thus I will discuss here only one of the fallacious arguments being heard in this community at this time. The argument is fallacious, but it has powerful sponsorship.

First, however, I should say that developments this week on the local clean air front--principally the demand of the Environmental Defense Fund that EPA and the state exercise their authority to curb SO₂ emissions--were welcomed by those of us anxious to breathe clean air again.

The latest local issue came to life some weeks ago when a Billings consultant proposed that the City of Billings finance a large-scale, "comprehensive" study of clean air issues in Yellowstone County and much of the surrounding area. The study would include gathering information on pollutant sources, wind patterns and other data. (The proposal did not state that much of the data could be obtained for the asking from EPA and state air quality offices, without cost.) The end result of the study would be used for "community education" and as an "economic development planning tool". The word "health" was used only twice in the proposal. Cost was estimated first at \$80,000 for a study that would include a "Regional Scale Puff Superposition Model". Cost without the "model" would be \$25,000.

City staff made some minor changes in the proposal. The city administrator presented it to the City Council, noting almost in passing that the study would "track where SO2 problems (if any, exist in the valley". A staff memorandum recommended that \$90,000 in Community Development Block Grant funds be used to cover the cost of the study, with a model. The Council approved the funding after a public hearing, and directed city staff to prepare a formal "request for proposal" to go out to possible contractors. A committee was appointed to prepare the request for bids. The committee was named by the city administrator, who presided at the only meeting that has been held thus far.

The committee was "loaded" with individuals known to resent Billings' classification as a high SO2 center. At its first meeting, Sept. 12, only Council Member Marion Dozier raised questions relating to health. She did not receive clear answers. (I attended the meeting, as did three other members of the Yellowstone Valley Citizens Council. We had received notices of the time and place of the meeting, because we had requested them. But there had been no public notice.,

It had seemed clear from the start that the project was intended as a development venture rather than as a study concerned with health. That assessment became even more clear with the fervent remarks of the executive director of the Billings Chamber of Commerce--a committee member.

The chamber, said the director, was getting many inquiries from firms which would like to move to Billings, if they could find sites in or near the city where they would not be denied a permit because of the SO2 they would produce. The chamber could not, with certainty, guarantee such sites. Thus the need for the study, to identify sites that would meet EPA and state agency approval.

(The director did not say in so many words that

3

his "prospects" would be producing SO₂, but that seemed clear to the listeners. The implication was that the "prospects" were being ordered to either clean up their operations or find a new home, because their home states were becoming interested in air quality. Possibly the "prospects" had an impression that Montana's citizenry never had heard of sulphur dioxide; or that in any event Montana has so much clear air that a little pollution would go unnoticed. But I'm sure that is not the impression the chamber director intended to give.,

The thinking of most Montanans, I believe, is that except for the Billings problem we are relatively free from sulphur dioxide, compared with most states. We have no burning desire to have any new health-threatening plants established here.

We are concerned primarily with the health of our families and neighbors. We know that two Yellowstone County refineries--Exxon at Billings and Cenex at Laurel--spew excessive amounts of SO₂; more than 12,000 tons each, annually, by their own calculations.

We know that scientists have determined that SO₂ is hazardous to people with delicate lungs; particularly children. We know that techniques exist for eliminating SO₂ from refinery emissions, and for monitoring stacks so that emissions can be carefully measured.

In addition to our local concerns, many of us believe what has been stated as national policy--that as a nation we have a responsibility to the rest of the world on health matters. We should not be contributing to acid rain or global warming or other ills that industry has created, world-wide.

Since industry has the techniques and resources for eliminating or drastically reducing SO₂, we believe EPA should be directed forcefully to carry out fully its responsibilities for protecting the public. We believe there should be no political interference with EPA's mission.

Thanks for your time, and attention.

Sincerely,

Robert White

Robert White
926 N. 30th
Billings, Mt. 59101
Ph. 406-259-2444

October 6, 1989

CLEAN AIR - SENATOR BAUCUS HEARING
BILLINGS, MONTANA OCTOBER 9, 1989



from the desk of
Edwin Zaidlicz

Senator Baucus:

My name is Ed Zaidlicz I live at 724 Park Lane, Billings. The statement I am about to give is on my own behalf as a concerned citizen and is based on a career in land management with the federal government; with more recent service as a member of the Montana Health Board.

I thank you for holding this public hearing in Billings and for the opportunity to present my views. It is entirely fitting that you solicit the opinions of involved Montanans here because of our protracted history of failure in seeking a remedy for our SO₂ pollution problem.

I will first respond in general to your proposed bill. It represents a fine start to correct a pollution problem that should have been vigorously addressed years ago. However, I respectfully recommend that you expand the bill to encompass all SO₂-NO_x sources of emission. The Clean States designation of 92% for Montana rests on an atypical cluster of power plants representing state of the art technology and the far sighted wisdom of the MPC in designing the Colstrip complex. It is hardly representative of the remainder of Montana's SO₂-NO_x emitters. It would be a disservice to leave the perception that Montana is problem free. In reality the National Air Quality and Emissions Trends Report of 1987 firmly establishes Montana's largest city Billings as one of the worst SO₂ polluters of 338 major cities. (Only Steubenville, Ohio is dirtier.) I am also troubled by the option to "purchase allowances" or to permit emission reduction offsets. It would appear that process could generate much mischief and result in a very involved statistical charade and impossible to reconcile.

More specifically I wish to share with you my concerns about the SO₂ problem we have wrestled with in Billings for at least the last 13 years. In my opinion we have effectively demonstrated that Montana and Billings are incapable or unwilling to correct our SO₂ dilemma alone.

In 1987 the Montana legislature, ignoring the vigorous protest of the Montana Health Board, passed Hannah's HB 534. That resulted in the substitution of the Montana State Air Quality SO₂ emission standards with the more lenient and inadequate federal EPA rules and that applied only for the Billings-Laurel area. The 6 area SO₂ emitters were grandfathered in insuring status quo. The regulatory clout of the Montana Air Quality Bureau was also compromised. We embarked on a cooperative, industry self-policing approach. EPA has characteristically exhibited aloof indifference. Today an assessment of this unprecedented process reveals the following results:

- 1) Community concern and cynicism has risen as to whether verifiable emission data exists to monitor progress or increased airshed degradation.
- 2) There is growing concern about the SO₂ health risks of short-term peaks of pollution that are not being monitored or controlled.

- 3) We have growing polarization between "environmentalists" and the "business community". Inspired perhaps by the perception of "the fox and henhouse operation".
- 4) There has been no improvement in reduction of SO₂ levels! In 1987, Billings held the 69th slot of 70 major cities - only Pittsburgh had a poorer SO₂ record. Today Billings has dropped to 337th of 338 major cities - (we are tied with Pittsburgh).
- 5) Predictably, the Billings-Laurel air shed remains saturated. No new industry generating any SO₂ has been able to enter our market arena. HB 534 and the status quo SO₂ pollution level have stifled economic development.
- 6) Desperate hopes are being voiced to identify and exploit loop holes to circumvent the stagnated economic situation. Among those are plans to devise new predictive models to identify oases of clean air or to expand the perimeter of the Billings air bubble.

It is unrealistic to pursue this faulted effort. We must examine and accept these bitter truths:

- 1) Industry will not initiate costly improvements voluntarily unless they are forced to! Procrastination and interminable committee discussions cost little and they have been highly successful for at least 13 years in avoiding needed change.
- 2) Certain segments of the 6 industrial complexes are old, obsolete, completely amortized and cannot efficiently compete in the market place without costly refitting! Grandfathering these major polluters into a status quo mode stagnates an economy that could benefit by efficient vigorous competition.
- 3) We cannot continue abdicating our regulatory roles to an industry that has a vested interest in the ultimate decisions. Current national debacles demonstrate the potentials for abuse by allowing permissive self regulation and self policing of public resources. Witness the cases of S & L, HUD, Pentagon procurement, Labor Department-pension fund audits, Energy Department-nuclear reactor contaminations (\$128 billion), Exxon-Valdez, Food inspection-Department of Agriculture etc, etc. Again the fox and henhouse syndrome.
- 4) If we are to enjoy the fruits of free enterprise, competitive forces must be allowed to operate in the open market place. Unlike China, Russia and other eastern European countries we cannot subsidize irresponsible or inefficient air polluting industries with the health costs of our citizens.
- 5) Regulatory control must be restored to state and federal public agencies. These professional servants of the public must then be held fully accountable. The continuing "tyranny of the data gap" must be recognized and rejected. The Tobacco Industry technique of challenging regulatory agencies for irrefutable research data to circumvent necessary remedial action is an injustice to our children and frail adults.
- 6) EPA, or the designated federal agency responsible for air pollution monitoring, needs a massive overhaul! The national standards must be equitable, adequate and responsive to the needs of all people. Why do we have such amazing differences in state standards i.e. Bay Area California 0.05 ppm for an annual 24 hr. standard while Montana has 0.10 ppm and EPA 0.14 ppm? Are our Lookwood-Laurel kids any less vulnerable than those in California? Why do some states impose short term 1 hour standards while EPA has none? Medical data supports the need for short term peak standards yet EPA drags its feet and does nothing.

What recent gains have been made in the awareness of air pollution problems and risks in the Billings area can be largely attributed to private groups i.e. Environmental Defense Fund and Yellowstone Valley Citizens Council plus assorted private individuals. I can appreciate MAQB's low profile in view of the Montana legislature's emasculation of their role but what is EPA doing? Must EPA be petitioned under federal law to take appropriate action? Surely Congress cannot condone their apparent inaction and indifference to serving the public's interest.

Senator Baucus, I applaud your efforts and leadership in this critical matter. Congress must draw the blueprint to rebuild and restore our Nation's perspectives. A hard hitting clean air bill that clearly defines base line standards that apply equitably to all states and with full regulatory accountability affirmed must be enacted without further delay. I wish you great success in your labors. Thank you.

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